ACTIVE TRANSPORTATION

DEVELOPMENT OF A REGIONAL TRANSPORTATION PLAN FOR THE GREATER TORONTO and HAMILTON AREA

FOR CONSULTATION

GREEN PAPER #3

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A Message from The Chair

February, 2008

Rob MacIsaac, Chair, Metrolinx

Just about everyone accepts that walking and cycling are good forms of exercise. Not enough people think of walking and cycling as good forms of transportation.

For too long, we have been dismissive of "Active Transportation" – people-powered movement – as a legitimate way to get around. Weather is usually cited as the key deterrent, but this argument does not hold up when we look around the world. There are many countries with climates similar to ours, in which walking and cycling are much more prevalent year-round.

Given the numerous benefits walking and cycling have to offer the people across our region, we need to take these modes of transportation much more seriously. We need to give them a significantly larger role in the day-to-day travel patterns around our region.

As Metrolinx develops a Regional Transportation Plan (RTP), a comprehensive strategy to build a coordinated, convenient, sustainable transportation network for Hamilton, Toronto and the surrounding regional municipalities of Halton, Peel, York and Durham, we will be looking at boosting the role of active transportation.

How to make this happen, both in terms of infrastructure and attitudinal shifts, is the focus of this, the third in our series of Green Papers feeding into the RTP process.

As with the other Green Papers, we want to hear from as many people as possible about what they think will or will not work as we consider options for making walking and cycling more integral to our transportation system.

We want to know how the system can better address safety and security concerns for cyclists and pedestrians. We are looking for ideas on how to share the limited space on our roads. We need to hear your views on infrastructure and land use, and how they can contribute to people's inclination to walk or cycle.

The more input we get, the better we will be able to determine what approach to take, not just for active transportation but for every component of the RTP.

Ultimately, our goal is to do a better job of planning and funding infrastructure decisions, to make sure the transportation system is coordinated, seamless and sustainable across the region.

This is a tremendous opportunity, with equally tremendous benefits:

- We can make this a more liveable region by improving people's mobility and giving them more time with their families;

- We can position our economy as a strong competitor on the world stage by making sure that businesses get their supplies and their products to market with ease; and
- We can protect and enhance our environment by reducing greenhouse gas emissions and reducing the impact of pollution on our air, water and land.

Achieving these benefits will not be easy. It is going to take leadership, planning, cooperation and determination. Most of all, it is going to take thoughtful consideration, based on realistic, pragmatic information.

We need your input – to make sure our vision for this region's transportation system, including active transportation, will meet your needs.

Thank you for taking the time to read and comment on this Green Paper. We look forward to hearing your views.

Rob MacIsaac
Chair, Metrolinx

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Executive Summary

Active Transportation at the Heart of our Transportation System

As part of its Regional Transportation Plan (RTP), Metrolinx is committed to developing an active transportation component that will result in a fundamental shift in the way walking and cycling are viewed by the public and accommodated within our transportation system.

This Green Paper presents the benefits, challenges, and opportunities for greatly increasing the role of active transportation in meeting daily needs, and as part of a solution to current and future urban transportation challenges.

Why is it Important?

Healthier and Happier Lifestyles: Active transportation promotes healthy lifestyles and can help reduce the risk of a variety of diseases like diabetes, colon cancer, and breast cancer. Moreover, there is good evidence to suggest that communities which are friendlier to active transportation offer a higher quality of life to their residents.

Equity: Active transportation modes are among the most equitable forms of transportation, available to a broad range of individuals. The obligation to improve access and address the needs of seniors, children and people with disabilities cannot be understated in providing safe amenities and infrastructure for all.

Clean Environment: Pedestrians and cyclists generate zero air pollution and almost no noise pollution. Less land dedicated to parking and roads limits the size of the urban area and reduces the length of trips while protecting valuable farmland or natural areas.

Efficiency: Walking and cycling are among the only modes of transportation which are largely immune to congestion delays and their resulting stresses.

Reduced costs for everyone: With the average annual cost of owning and operating a vehicle in the Greater Toronto and Hamilton Area (GTHA) reaching $10,600, residents can save money by walking and cycling. Taxpayers can save as well. The costs of active transportation infrastructure is significantly lower than the per kilometre costs of other transportation infrastructure.

Where We Stand

Active Transportation in the GTHA is not as developed as in cities like Montreal or Vancouver. Relatively few of our residents walk and cycle to work and school despite living in close proximity, creating a large potential market for active transportation in the GTHA.

Creating Active Communities

Moving forward, road design must better balance the needs of motorists and the desire to create walkable communities. How can we design walking and cycling back into our urban spaces? There are many possibilities, such as:

- improving connections to amenities and transit stops with "cut-through" pathways in neighbourhoods;
- narrowing existing roadways for bicycle lanes and sidewalks;
- converting empty lots into public meeting spaces; and
- transforming Park-and-Ride lots into attractive, intensive concentrations of employment, living, shopping and recreation, centred around transit.

Encouraging changes to the prevailing land development patterns requires that active transportation become fundamental to all dimensions of city building and that all orders of government coordinate their efforts. The convergence and integration of transit, land use and active transportation needs will require holistic approaches to the complicated challenges of developing a progressive Regional Transportation Plan.

Barriers To Active Transportation

There are a variety of barriers to making more daily trips on foot or by bicycle a practical choice for many residents in this region. Among the issues that will need to be addressed:

- **Land Use and Physical Barriers** – Many residents simply do not have the choice of traveling by active modes for regular tasks. This is the result of conventional approaches to land use that segregate living, shopping, working, and recreation. Even if distances are walkable, in some cases the inconvenience of walking, lack of safe street crossing points or a lack of sidewalks may lead to a drive rather than a walk.
- **Limited Resources** – Municipalities often cite limited financial resources as a barrier to the development of facilities for active transportation. Even if such facilities can be built relatively inexpensively as part of road reconstruction projects or through development charges, for example, the lack of budget for maintaining them may discourage implementation. In addition, most municipalities do not have staffing capabilities to plan and design cycling facilities.
- **Institutional And Legislative Barriers** –Active transportation issues and needs are not part of the regular agenda in public policy decision making. Decisions tend to be made on the basis of reducing short-term costs. The siting of schools is one example, where land availability outweighs factors such as what proportion of the student population will be able to walk to school. There must also be an effort to address legislative barriers, including the *Highway Traffic Act*, which makes enabling active transport difficult.
- **Social Barriers** – From parents insisting on driving their children to school, to municipal planners who eschew bicycle lanes on the assumption "nobody cycles around here," attitudes will need to change in order for active transportation to increase. The greatest potential to change societal perspectives towards active transportation exists with children and youth, before habits are ingrained.
- **Private Sector Involvement** – Active transportation needs a boost in terms of its acceptance and promotion. Many actions that the private sector can take to help promote active transportation are relatively inexpensive, such as providing on-site bike racks and lockers or allowing employees who bike to wear more casual clothes.

Innovative Practices Elsewhere

Cities in North America and abroad are implementing innovative strategies to encourage travel by active modes. Vancouver's bike priority corridors, bikeway design in the Netherlands and Berlin, the concept of shared street space, commonly known as a Woonerf or "Home Zone", and Paris' Velib program all provide interesting possibilities for our region. Financing models in other jurisdictions are also of interest. Both the German Federal Government and the Dutch Central Government put millions of dollars towards cycling each year, including spending on bikeway extensions, cycling research, and demonstration projects. In Canada, the *Ministère des Transports du Quebec* (MTQ) and the B.C. Ministry of Transportation are showing great leadership in investment in cycling facilities. These funds are primarily used in cost-sharing agreements with municipalities.

Key Opportunity Areas

Cities around the world are reaping the benefits of innovative programs to enhance the role of active transportation. The real lesson from these international examples, however, is that progress is possible when active transportation is prioritized at the institutional and cultural level. In other words, a vision for the GTHA of making active modes the first choice for travel, wherever possible, will not come about simply by building more walking and cycling facilities. A culture of walking and cycling must be fostered. Therefore, the RTP should include strategies to address the physical, cultural, and institutional challenges to active transportation in the region.

Four core objectives have been identified in relation to active transportation:

1. Integrating transportation modes and reducing physical barriers and improving the design of our communities and infrastructure;
2. Making active transportation safer and more comfortable;

3. Increasing the public's awareness of the benefits of active transportation and breaking down social barriers; and
4. Making cycling, walking or using a wheelchair a realistic first choice for travel, wherever possible.

Some of the thinking that needs to go into this effort includes:

- **Target 2X/4X** – To achieve a significant change in active transportation trips, perhaps doubling walking trips and quadrupling cycling trips should be the goal. Ultimately, targets for transportation must be rationalized with the very aggressive targets being set for greenhouse gas emissions, including the City of Toronto's targets of an 80 per cent reduction in Greenhouse Gas (GHG) emissions by 2050.
- **Reducing Expenditures** – Reducing just 10 per cent of the motorized trips from the transportation network could translate into several hundreds of millions of dollars in capital cost savings every year, which could then be invested in improvements to make active transportation more viable.
- **Building and Integrating the Network** – Strategic investments in the walking and cycling network will help mitigate man-made and physical barriers, connect key destinations, and integrate the network across municipal and regional boundaries. Improvements to the network can be categorized as regional or local in nature, reflecting the need to consider the scale of implementation. Given Metrolinx's role as a regional transportation authority, there is a particular opportunity to improve and integrate the cycling network across the region.
- **Supporting Mobility Hubs and Transit Corridors** – As noted in the second Green Paper, mobility hubs are focal points in the transportation system, connecting rapid transit stations and the surrounding land use in a way that maximizes transit ridership, reduces automobile usage, and encourages trips on foot and by bicycle. A key indicator of success for mobility hubs is whether the core transit station and the immediate surroundings of buildings, public spaces, and streets are intensively used by pedestrians and cyclists.
- **Leveraging Partnerships** – Creating a culture that embraces active transportation for short trips requires appropriate facilities and support in the form of promotional campaigns at the community, neighbourhood, school, and employment levels. In addition, programs are needed to educate pedestrians, cyclists, and motorists regarding safe travel.
- **Raising the Profile of Active Transportation** – Even if there is sufficient budget for a particular project, there may be insufficient professional staff to guide its implementation. Only four municipalities in this region have full-time active transportation coordinators. Effective champions can make the difference in encouraging municipal staff, councilors, and the general public to support active transportation.
- **Targeting School Travel** – As schools are frequently within walking or cycling distance from home, school travel represents an ideal situation to promote the benefits of walking and cycling. Children themselves are enthusiastic about the independence and fun aspect of active transportation – almost 75 per cent of Ontario elementary school children said they would prefer to walk or cycle to school on a regular basis.
- **Reforming Road Design** – While many municipal planners and engineers agree with the concept that cities should support a multitude of mobility options, the "car is king" approach is integrated into many professional design standards and city processes. Traffic Impact Studies, required as part of the approval of major developments, prioritize vehicular traffic movements over other forms of mobility. Changing this requirement to *Transportation Impact Studies*, which would consider the effect of a development on all forms of transportation, is an important step in including pedestrian and cyclist needs. Moving forward, developer contributions for sidewalks, lighting and bicycle facilities could be required as a condition of site plan or subdivision approvals.

Looking to the Future

We have choices on how we will shape our region and invest in our transportation system now and over the next 25 years and beyond.

In assessing individual active transportation initiatives, a number of factors need to be taken into account, such as their requirements regarding social behaviour, land use, infrastructure, enabling technology, level of investment and policy intervention.

There are tradeoffs associated with investments in active transportation that need to be considered. The design of streets is a good example. In built up areas, there is limited width in the right-of-way so that cars, transit vehicles, pedestrians, and cyclists all vie for scarce existing space. Expanding sidewalks may limit opportunities for bicycle lanes; adding bicycle lanes may mean the removal of on-street parking; dedicated transit lanes may come at the expense of left-turning lanes.

Other "filters" will also be required to determine which projects should proceed, including costs and potential risks. Among the considerations:

- **Public and political acceptance** – Whether there is the political will to implement the strategy and if the public will accept the measures.
- **Resource and cost requirements** – The financial investment required and potential risk for cost overrun or slower-than-anticipated cost recovery.
- **Regulatory or legislative barriers** – Whether there are any laws or regulations act as obstacles to a specific initiative.
- **Technical feasibility** – The risk in implementing the initiative from a purely technical point of view.
- **Effectiveness** – The degree to which the strategy is likely to be successful in providing the projected benefits.
- **Implementation risk** – Any factor affecting the timely ability to implement the strategy, possibly related to delays with concurrent infrastructure projects, or staffing or other resource problems.

While active transportation will be a key component of the RTP, it can't be achieved in isolation. Initiatives to improve conditions for active transportation will need to be assessed as integrated packages with other elements of the RTP, particularly transit, mobility hubs, and transportation demand management.

A bold plan to make active transportation the first choice for travel, wherever possible, will require collective participation from all levels of government, the private sector, and other agencies. Key allies in advancing active transportation include municipalities, school boards, transit authorities, private developers, and employers. All levels of government can support and guide municipal infrastructure development through cost-sharing, promotional programs, and supportive legislation and policies.

We are on the right track, but more ambitious initiatives from all stakeholders are needed to enhance the role of active transportation in meeting daily mobility needs in the GTHA, and as part of a solution to current and future urban transportation challenges.

WE WANT YOUR INPUT...

To participate in the Regional Transportation Plan consultations, please visit our website at:

www.metrolinx.com

You can also get in touch with us by fax, e-mail or regular mail:

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1 Introduction

1.1 Active Transportation - The Key to Sustainability

Active transportation refers to any form of human-powered transportation—walking, cycling, using a wheelchair, in-line skating or skateboarding. Everyone engages in active transportation in some form or another, whether it is walking to the bus stop, going for a bike ride with the family or cycling to school. Residents who turn to active transportation as a viable means of commuting and carrying out personal business realize benefits in terms of health, happiness, reduced travel costs, and the satisfaction that their travel produces almost no pollution, benefiting the environment.

Figure 1 Different forms of active transportation.

Active transportation is the only form of transportation that satisfies all attributes of a sustainable transportation system. It allows the basic access needs of individuals and societies to be met safely and in a manner consistent with human and ecosystem health, and with equity within and between generations. It is also affordable, efficient and supports a vibrant economy. It limits emissions and waste within the planet's ability to absorb them.

Active transportation is unparalleled in minimizing the need for costly, space-intensive infrastructure. Promoting active transportation can help us address our current and growing infrastructure deficit at minimal cost. Shifting to active transportation can also help reduce congestion, along with its attached social, environmental and economic costs.

The need to embrace active transportation as a means for achieving more sustainable transportation is becoming clearer by the day, particularly in light of the astounding gap between current greenhouse gas (GHG) emissions from transportation and the levels that are considered necessary to avoid the devastating impacts of climate change. Modest changes will not suffice; twofold or threefold increases in the proportion of trips made by active modes may, in fact, be considered a bare minimum.

The Growth Plan for the Greater Golden Horseshoe released in 2006 stressed the need to build communities and retrofit our urban environments for walking and cycling to play a much more prominent role than they do today.

"Walking and cycling will be practical elements of our urban transportation systems."

The Growth Plan for the Greater Golden Horseshoe

1.2 The Challenge

Metrolinx is committed to developing an Active Transportation Plan that will result in a fundamental shift in the way walking, cycling and other environmentally sustainable modes are viewed by the public and accommodated within our transportation system. This is a bold objective, and not without its challenges. While the local climate is a partial impediment to walking and cycling during winter months for some, this is hardly the most significant obstacle. Overall, active transportation has not been prioritized in the Greater Toronto and Hamilton Area (GTHA), except at the broad policy level. As a result, our supportive programs and infrastructure lag behind those of many other urban regions. In addition, the form and spacing of development throughout the region precludes walking and cycling for daily trips in many areas. Beyond infrastructure investments, institutional and societal barriers need to be overcome to achieve a fundamental shift to more active transportation. Yet, the health, economic, and environmental benefits from such a shift could be significant.

These challenges and benefits will require careful consideration as we plan for more active transportation. People have complex lives and travelling by active modes is not always feasible. With targeted policies and initiatives, the role of active transportation in supporting residents' daily mobility needs can be greatly enhanced to the benefit of us all.

1.3 The Regional Transportation Plan

Metrolinx was created by the Government of Ontario to plan and deliver improved and comprehensive transportation for the metropolitan region comprising the

Cities of Toronto and Hamilton and the four regional municipalities (Durham, Halton, Peel and York), referred to as the Greater Toronto and Hamilton Area (GTHA). An immediate priority for Metrolinx is the creation of a Regional Transportation Plan (RTP) – a strategic, long-term vision for a coordinated transportation system across this entire region. The RTP will serve as a guideline for infrastructure investment decisions and a blueprint for action.

RTP development will include a series of seven Green Papers on key topics. The Active Transportation paper is the third Green Paper. These Green Papers will be followed by White Papers, then by a Draft RTP. All of these documents will be posted on the Metrolinx website and the Environmental Bill of Rights registry for interactive input from the public and stakeholders. Results from consultations with the public, stakeholders, advisory groups, and Metrolinx staff and Board of members will feed directly into the plan.

The draft RTP report will be completed by spring 2008 and will emphasize balanced initiatives that ensure access by all residents and visitors to a full range of transportation choices across the GTHA. It will also provide a framework for transportation decisions at the local level by citizens, system users, transportation providers and other stakeholders.

1.4 The Active Transportation Green Paper

This paper presents the benefits, challenges, and opportunities to greatly increase the role of active transportation in meeting daily mobility needs, and as part of a solution to current and future urban transportation challenges. This discussion draws on experience from the GTHA and elsewhere to begin to answer why, where, and how the RTP can improve conditions for active transportation as part of a package of initiatives across modes of transportation.

Four core objectives have directed the initial stages of the active transportation plan formulation:

- Integrating transportation modes, reducing physical barriers and improving the design of our communities and infrastructure;
- Making active transportation safer and more comfortable;
- Increasing the public's awareness of the benefits of active transportation and breaking down social barriers; and
- Making cycling, walking or wheeling a realistic first choice for travel.

The discussion and strategies presented are closely tied to many of the other Green Papers: Transit, Highways and Roads; Transportation Demand Management (TDM); and Mobility Hubs. Every transit trip begins and/or ends with walking or cycling, so good conditions for active modes are critical to the success of transit. The design of roads has a significant effect on the quality of the pedestrian and cycling environment. TDM initiatives include both incentives (e.g. emergency ride home) and disincentives (e.g. parking costs) to promote or encourage travel by walking, cycling and other environmentally sustainable modes. The Mobility Hubs paper discusses the need to bring activities closer together, integrate the various transportation modes, and create more human-scale environments.

Following a discussion of the benefits of active transportation, the existing situation is described in terms of the supply of infrastructure to support walking and cycling, the design of our communities and current levels of travel by active modes. Recent successes in the GTHA are highlighted, barriers to active transportation are identified, and a sampling of innovative practices from around the world is presented, with the intention of helping readers imagine what might be achievable in the GTHA.

In order to help generate discussion on this topic, a series of alternative scenarios are outlined, ranging from business as usual, to completely re-thinking the current transportation system to favour non-motorized modes of transportation, or at least put them on a more level playing field. Potential initiatives are identified for each alternative scenario and a framework for evaluating these initiatives is presented. The paper finishes by identifying several Quick Win opportunities, and discussing roles and responsibility for further action. In reviewing the paper, readers are encouraged to exercise their imaginations, and think about how we would be better off if we planned for a greater reliance on active transportation.

People:

- Safe mobility for people of all ages and means
- Healthier lifestyles and reduced risk of chronic diseases (e.g. heart diseases, stroke, obesity)
- Cleaner air and reduced transportation emissions
- Integrated transportation system with efficient connections to and from transit
- Well-linked communities with strong social ties and sense of place
- Greater transportation choice
- Recreation and relaxation opportunities

Environment:

- Lower fossil-fuel consumption travel
- Lower emissions
- Reduced noise pollution
- Less land consumed for transportation infrastructure
- Enjoyment of nature and greater appreciation of the environment

Economy:

- Happier commuters and more productive employees
- More affordable transportation options
- Reduced development costs (e.g. less parking and fewer roads required)
- Enhanced marketability and land values for developments that are pedestrian-friendly
- More reliable travel time
- More efficient use of existing infrastructure and lower cost infrastructure improvements
- More efficient goods movement in higher density areas (e.g. bicycle couriers)
- Healthier population and lower healthcare costs

Exhibit 1: The Role of Active Transportation Through Three Lenses

1.5 The Role of Active Transportation in the RTP

Building from the sustainable principles of the province's Growth Plan to shape and accommodate future growth, the RTP will be developed based on the needs of **quality of life**, **the environment**, and **our economy**. Active transport is shown to be a key aspect of the RTP when viewed through each of these lenses.

2 The Benefits of Active Transportation

2.1 Health

There is growing research about the benefits of active transportation in promoting healthy lifestyles and reducing the risk of disease. Interest has grown in communities that encourage more physical activity by design, reduce automobile use – thus reducing harmful emissions, accidents, and noise pollution – and provide coherent social space.

Ultimately, pedestrians and cyclists generate zero air pollution and almost no noise pollution. The negative health effects associated with high levels of air pollutants are widely acknowledged. A report released in November 2007 by Toronto's Medical Officer of Health, Dr. David McKeown, suggested that vehicle emissions alone result in 440 premature deaths and 1,700 hospitalizations per year. He also stated that 200 lives and $1 billion in health costs could be saved by achieving a 30 per cent reduction in such emissions.

Around the time that a 1996 report by the U.S. Surgeon General highlighted the importance of low-level physical activity (e.g. walking) to our health, attention began to focus increasingly on the connections between urban sprawl, travel patterns, and health. A strong association between the three is well-established, but research on how sprawling development patterns actually affect our travel choices and subsequently contribute to health problems is not yet commonly used by practitioners. The built environment is inevitably part of the equation and a bold initial U.S. study suggests that a sprawling versus compact built environment could account for as much as a 2.9 kilograms (kg) (almost 6.5 pounds) difference in average body weight of residents. [1]

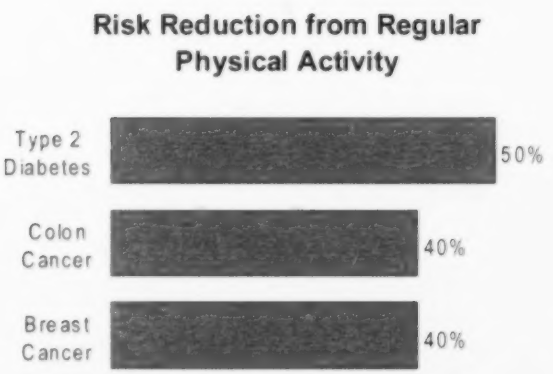


Exhibit 2 Risk Reduction from Regular Physical Activity

Source: Health Canada

There is large potential to encourage more travel by walking and cycling. For example, a survey found that 75 per cent of Ontario children state they would prefer to walk or cycle to school on a regular basis. [2] Furthermore, 91 per cent of school-aged children have access to a bicycle, and almost 45 per cent of Canadian children live two kilometres (km) or less from the school they attend. However, 64 per cent never cycle and 47 per cent never walk. [3] This is one instance of how community design can encourage more trips by walking or cycling, as discussed later.

School Travel and Health

Children between the ages of five and 19 comprise a surprising one-fourth of Canada's population, of which 25 per cent are considered overweight and this proportion is increasing. Furthermore, the activity levels of Canadian children dropped by 30 per cent between 1990 and 1998. Action is urgently needed and there are some powerful opportunities within grasp. With five million students and 400,000 employees, Canadian schools are critical hubs for promoting active transportation and encouraging healthy habits early in life.

1 Ewing, R. et al. Relationship Between Urban Sprawl and Physical Activity, Obesity, and Morbidity. Journal of Public Health Promotion, 18(1), 47-57, 2003

2 Ontario Walkability Study (2001) Trip to School: Children's Experiences and Aspirations.

3 Go for Green (1999) The Case for Active and Safe Routes to School.

2.2 Happiness and Quality of Life

Many people view physical activity, particularly that incorporated into daily activities, as important to their overall level of satisfaction. A recent Statistics Canada study revealed that 19 per cent of cyclists reported their commute as the most pleasant activity of the day, whereas only two per cent of drivers felt the same. [4] This suggests that improvements to active transportation facilities could result in happier commuters.

Research suggests that firms which relocate out of downtowns and other compact, mixed-use areas to more suburban locations, deal with significant decreases in employee satisfaction as their employees struggle to re-organize non-work activities which they used to take care of during lunch or while commuting. Banking, dry cleaning, grocery shopping, etc. are often pushed to the weekend, meaning there is less time to relax. Walking and cycling are feasible in compact, mixed-use communities, and supportive environments help us to manage our schedules more efficiently. This ultimately improves our quality of life.

2.3 Addressing the Needs of Everyone

Active modes are among the most equitable forms of transportation because they are available to a broad range of individuals. Conversely, planning transportation systems around the automobile degrades mobility for those who do not have a driver's licence (36 per cent of the GTHA's population) [5], cannot afford a vehicle, or choose not to drive. Such vulnerable populations might also include low-income families pushed into the least accessible neighbourhoods under the pressures of a hot housing market. As a result, an already overburdened segment of the population must devote significant portions of its time and income to transportation. They must also contend with environments that were never designed or even retrofitted for walking efficiently and comfortably. Investment in cycling facilities and neighbourhood walkability along with transit improvements offers a tremendous opportunity to improve access to employment and services for everyone, particularly the region's most vulnerable.

Figure 2 Curb cuts and other design elements are necessary in order to accommodate all citizens.

With an aging population and increasing fuel prices, mini-electric motorized modes of transport, such as Segways, scooters, and golf carts may become more popular as affordable, convenient options for short-distance trips. Pathways and bicycle lanes may have the potential to accommodate these mini-electric modes and support connections to nearby destinations, such as rapid transit stations and local retail.

2.4 Secure and Vibrant Communities

As Jane Jacobs was fond of pointing out, pedestrians tend to feel more secure and comfortable walking where there are more people milling about (more "eyes on the street"). Not only do we feel more secure, but as we comfortably move through our communities at a human pace, we have more time to appreciate our environment as well as the people in it. Areas that create comfortable environments for active modes help to foster the area's social inclusivity and sense of place. This support can come in many forms, such as convenient connections between destinations; street lighting, cleanliness, street furniture, and trees; mixed land uses; calm motorized traffic; and neighbourhood social-mixing.

2.5 Air Quality and Climate Change

Not a day goes by that we do not read about climate change issues in the media or health-related impacts of air pollution. All levels of government are now under substantial pressure to introduce programs that will help us meet Greenhouse Gas (GHG) emission targets and improve air quality. Since all modes of active transportation emit zero emissions, they can play a significant role in helping us meet the aggressive targets starting to emerge

4 Statistics Canada (Nov. 2007) The Daily: How workers perceive their daily commute to work.
5 2006 Transportation Tomorrow Survey - 36 per cent of respondents did not have a driver's license.

from various levels of government and local municipalities. This potential role is highlighted when one considers that more than 17 per cent of daily auto trips in the GTHA are walkable and almost 40 per cent of auto trips are bikeable [6] given the distances involved. Furthermore, per km air pollution reductions are large because walking and cycling usually replace short, cold start trips for which internal combustion engines have high emission rates. Therefore, each one per cent of automobile travel replaced by active modes reduces motor vehicle air pollution emissions by two per cent to four per cent. [7]

Other benefits can arise from greater take up of walking and cycling, not least being a reduced land area dedicated to roads and parking areas, which themselves lengthen distances between buildings. This discourages walking, make the urban area larger, and increases local temperatures, among other impacts.

2.6 Reliable Travel Time

Whether a trip will take 10 minutes or 20 is often irrelevant as long as we can accurately predict how long it will take, and can therefore adjust our schedules with confidence. Increasing traffic congestion leads to more traffic incidents and more unpredictability for motorists, auto passengers, and those using conventional public transit. Walking and cycling are among the only modes of transportation which are largely immune to these unpredictable annoyances and their resulting stresses.

Figure 3 A good example of how travel time can be more predictable for cyclists when the proper infrastructure is provided.

2.7 Reduced Costs

Active modes of transportation are the most cost-efficient, from both a personal and community perspective. While difficult to quantify, the potential community-wide cost reductions from increased walking and cycling are extensive and include health care costs due to air pollution, water pollution and collisions, traffic congestion, and parking provision. Personal travel cost savings are also significant. With the average annual cost of owning and operating a vehicle in the GTHA reaching $10,600, [8] investments that allow residents to walk or cycle to their destination (including transit) go a long way towards improving personal transportation affordability. For example, Go For Green has estimated that commuting by walking and cycling saves Canadians over $800 million per year compared to commuting by automobile. [9] This works out to approximately $180 in annual savings per walk commuter and $570 per bicycle commuter. If the ability to walk or cycle to work allows one to own fewer vehicles, the cost savings would obviously be much higher.

In addition, infrastructure costs for active transportation are minimal compared to the roadway expenditures required to support travel by motorized vehicles. For example, widening roads for bicycle lanes costs in the order of $150,000 per km, paved pathways cost approximately $225,000 per km, while adding cycling lanes without road widening (i.e., restriping) costs approximately $20,000 per km [10]. These costs are significantly lower than the approximately $1.3 million per km for widening a two lane urban arterial road to four lanes. [11]

> **"Expanding roadways to accommodate traffic is a bit like combating obesity by buying larger pants."**
>
> *Lloyd Wright, Transportation Consultant*

The cost differential is compounded when one considers that cyclists and pedestrians make more efficient use of infrastructure. A roadway can carry seven to 12 times as many people per metre (m) of lane per hour by bicycle compared to by automobile at similar speeds in urban

6 2006 Transportation Tomorrow Survey. This conservatively assumes the potential market for active transport to be any trip that would take less than 30 minutes to walk (less than two kilometres) or cycle (less than five km).
7 Komanoff, C and Roelofs, C. (1993) The Environmental Benefits of Bicycling and Walking, National Bicycling and Walking Case Study No. 15, U.S. Department of Transportation, FHWA-PD-93-015.
8 Clean Air Partnership (Nov, 2007 - Draft), The State of Active Transportation: Greater Toronto, Hamilton and Beyond, Prepared for Metrolinx.
9 Go for Green (2004) The Business Case for Active Transportation: The Economic Benefits of Walking and Cycling
10 City of Toronto Bike Plan (2001).
11 Go for Green (2004).

areas. Paths for pedestrians can handle 20 times the volume per hour than roads for cars in mixed urban traffic while a bike parking space costs only five per cent of a car parking space. [12] While adding bicycle lanes or a paved pathway alongside a roadway may not remove the need for road widening, these costs and statistics demonstrate that walking and cycling trips make more efficient use of the existing transportation system than auto trips. They are also more cost-effective to accommodate.

2.8 Economic Gain

Beyond motorized transportation simply costing more, there are considerable positive economic gains associated with active transportation. They include the direct economic gains from bike tourism, increased retail sales in pedestrian-friendly environments (a relationship well understood by shopping centre designers), bicycle-related sales, and bicycle manufacturing, not to mention the multiplier effects of these industries. The phenomenon of property values disproportionately increasing along bikeways, greenways and trails is also well-documented. And quite simply, experience around the world has shown that walkable places are desirable places. Economically, they also provide a good deal: walking and cycling allows for more density; density allows for more development and thus higher assessments in a given area.

Unravelling these considerations is challenging, but a 2004 GO for Green report associates them with $3.6 billion in economic benefits, given the current levels of active transportation. If the active transportation share of commuting trips across Canada were to increase to the level seen in Victoria, British Columbia (B.C.) (15.2 per cent), the report predicts that this value would double to $7 billion. [13]

12 Go for Green. Active Transportation Community Solutions for Climate Change.
13 Go for Green (2004) The Business Case for Active Transportation: The Economic Benefits of Walking and Cycling.

3 Creating Active Communities

Where we live affects our opportunities to walk and cycle as part of our daily activities. Consider an example: as children move away from home, many baby boomers are "downsizing" from larger homes in suburban areas to smaller homes or condos in more urban areas, be it in central Hamilton, midtown Toronto, or the Burlington Waterfront. Such couples often find themselves walking to many more daily destinations – restaurants, shopping or cinemas. They may even find they need fewer household vehicles to meet their daily mobility needs. Why does this occur? Three aspects of the built environment, in particular, have been consistently found to be important predictors of travel behaviour and walkability: density; land use mix; and connectivity.

3.1 The Land Use Connection

Land use refers to development patterns and how the built environment is laid-out and designed. Are stores and workplaces located close to where people live or are they separated out in regional shopping centres and business parks? How many people live in a neighbourhood and in what type of dwellings do they live (e.g. single detached houses, rowhouses, apartment buildings or a mix)?

When routine destinations – schools, offices, restaurants, parks, neighbourhood retail – are within a convenient distance, people are more likely to walk or cycle. For example, among Canadian children living within one km of school, over eight in 10 (86 per cent) walk most of the time. Among those living one to three km from school, half (50 per cent) walk most of the time. Only five per cent of those living beyond three km walk.[1] This has important implications for how physically active children are and childhood obesity. The proximity of destinations is a function of both density (i.e. compactness) and land use mix.

An interesting example of the importance of land use in our transportation choices is that of rapid transit. Inbound GO Transit and TTC subway trains in the morning and outbound trains in the afternoon are busier than in the reverse direction – when service is provided at all. This is easily understandable: 77 per cent of GO Transit riders walk to their end destination at Union Station because it is easy, fast and comfortable to do so. At other stations, there is often no easily reachable destination and the land at stations is used mostly for parking. As a result, there is little use of the transit system in the outbound direction in the morning and inbound in the afternoon. Higher density and mixed land uses surrounding stations is essential to promote more efficient use of the transit system and more walking or cycling.

3.2 Connectivity, Streetscape Design, and Parking

In addition to the proximity to destinations, travel by walking or cycling is influenced by how direct the trip is. This is a function of connectivity – the degree to which roads and paths are connected and allow direct travel between destinations. Compared to the traditional grid, which offers direct connections between most points, street networks in newer development typically consist of looping streets and cul-de-sacs, which may significantly increase the length of a trip even if is actually quite short "as the crow flies."

Just as land use greatly affects choice of travel mode, the design of streets and streetscapes also has a major impact on the quality of the pedestrian and cycling environment. High speeds, wide roads, inadequate sidewalks and bicycle facilities, and infrequent crossing points all make roads uncomfortable, or even unsafe, for pedestrians and cyclists. Roads meeting this description were designed that way to facilitate vehicular rather than pedestrian traffic. Road design must be context-sensitive and balance the needs of motorists and the desire to create walkable communities.

Parking is another example of how auto-oriented planning has become the status quo. Many municipalities in the GTHA require new development to provide enough parking to meet peak needs, assuming all visitors arrive by car. The typical result is free parking in large, surface lots. The parking separates buildings from the street and makes travel by walking, cycling, or transit less attractive. Further, since building and maintaining parking facilities is costly, free parking subsidizes auto use.

1 1998 National Survey on Active Transportation.

Getting to the cinema: two typical walking experiences in the GTHA

Westdale, Hamilton

- Seven-minute walk
- Passes largely residential land uses following a well-connected grid
- Most of the walk is quiet, with very little adjacent traffic and crossing the street is relaxed
- Cinema is located on the retail-lined main street of King Street West.

Don Mills, Toronto

- 20-minute walk
- The first section follows a circuitous route along curvilinear residential streets
- Bulk of this walk is along a major six-lane arterial with heavy traffic on one side and fences on the other
- Arterial can only be crossed where there are traffic lights, which tend to be roughly a six-minute walk from each other
- After crossing the intersection of two major arterials, the mall is accessed by walking through a busy parking structure.

3.3 Building Active Transportation Into the Urban Landscape

As indicated in the previous section, every transit trip begins or ends with walking or cycling. When access to transit for pedestrians and cyclists is poor, transit users start their trip by driving or simply do not view transit as a viable option. If connections to transit stations became more direct, comfortable and interesting, more people would leave their car at home. Congestion at station parking lots would be relieved and more people would gain access to rapid transit without the need to provide more local transit.

How can we design walking and cycling back into our urban spaces? The possibilities are limited only by our collective creativity and political will: improving connections to major destinations like schools, offices, shopping areas and transit stops with "cut-through" pathways in neighbourhoods and overpasses; narrowing existing roadways for bicycle lanes and sidewalks (e.g. "Road Diets") along with fewer left turn options; converting empty lots into public meeting spaces; transforming park-and-ride lots into attractive, intensive concentrations of employment, living, shopping and recreation, centred around transit. Alternatively, new development provides the opportunity to "get it right the first time".

Active transportation is essential to our contemporary goals of compact and dynamic mixed-use environments, such as the urban growth centres and intensification corridors envisioned by the province's Growth Plan, which both aim to accommodate significant growth in residential, institutional, commercial, recreational, cultural and entertainment land uses around major transit infrastructure. We cannot forget that active transportation facilities comprise the community infrastructure which connects us to these diverse land uses as well as transit. Ensuring that such compact urban form realizes its potential to foster more sustainable travel patterns requires communities that are designed to support safe, convenient, and comfortable walking and cycling.

Encouraging such changes to the prevailing land development patterns requires that active transportation becomes fundamental to all dimensions of city building and that all governments coordinate their efforts. Municipalities will need the fiscal, legislative, technical, and policy tools to incorporate a walking-friendly culture into their agendas and, thus, advance existing standards and practices. Such tools might be as broad as an official plan overhaul, land value capture possibilities for transit agencies, or the mandatory inclusion of active transportation factors in the planning framework. They also might be as specific as funding targeted services near rapid transit stations such as daycare or bike share. This convergence of transit, land use and active transportation needs will require holistic approaches to the complicated challenges of developing a progressive Regional Transportation Plan.

What makes an active community?

- A diverse mix of land uses within walking distance that are conveniently connected
- A diverse socioeconomic mix of other pedestrians at all hours of the day
- A well-maintained and visually interesting street environment (e.g. public art)
- Direct and connected pedestrian and cycling routes
- Safe and frequent street crossings
- Protection from extreme weather, such as wind and sun
- Tactile and audible cues for those with physical disabilities
- Ample street lighting, street furniture, and street trees
- Signage with destinations, times/distances focused on pedestrians and cyclists
- Well-managed, slow and quiet motorized traffic

4 Active Transportation in the GTHA

4.1 Walking and Cycling Infrastructure

Active transportation infrastructure consists of the systems of sidewalks, road lanes and trails that support human-powered transportation and keep them separate from motorized modes of transportation. The degree of coverage, continuity and maintenance of this infrastructure are significant determinants of the amount of travel by active modes.

The manner in which sidewalk infrastructure is provided for in the GTHA varies greatly. While such variation should be expected with differing land use types (e.g. industrial versus shopping area), it also varies greatly across the GTHA within the same land use types. This is most noticeable in residential areas. While many neighbourhoods, typically older ones with grid street networks, have an extensive system which provides access to local parks, shops, etc., others, such as typically newer suburban neighbourhoods with curvilinear streets and cul-de-sacs often have no sidewalks and circuitous routes to contend with. This is a disincentive to the use of other active transportation modes within the neighbourhood, and to the use of public transit that is typically accessed by one of the active modes.

Figure 4 The provision of sidewalks is not consistent throughout the GTHA.

Many municipalities in the GTHA have implemented a variety of dedicated infrastructure in support of other active transportation modes that complement the network of sidewalks already present in many neighbourhoods. This infrastructure consists of networks of dedicated and shared on-street lanes as well as off-street trails that can be used by joggers, cyclists, in-line skaters, skateboarders, etc.

The amount and the type of this infrastructure differs across the regions. More dense, urban areas provide most of this infrastructure on-street (as dedicated or shared on-street lanes), reflecting the utilitarian nature of most cycling trips and lack of space for off-street facilities. More rural areas use parkland for most of their paths, which are often looping nature trails for recreational use that may not connect activity centres. Halton, Peel and Durham, for example, have a strong emphasis on recreational, off-road trails, while Hamilton, Toronto, and York Region include more on-street facilities.

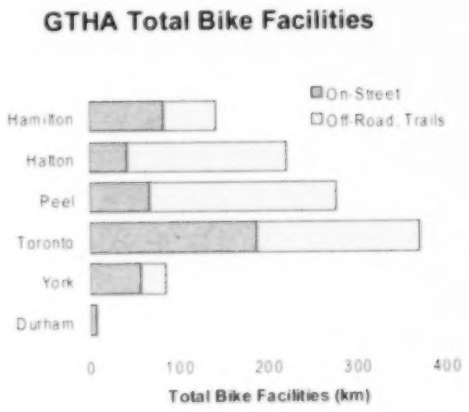


Exhibit 3: GTHA Total Bike Facilities

Source: Clean Air Partnership (Nov. 2007 – Draft). The State of Active Transportation: Greater Toronto, Hamilton and Beyond (Draft). Prepared for Metrolinx.

Although the intent of this infrastructure is to provide a complete, coherent network of facilities, there are numerous types of physical barriers and disincentives that restrict its full potential use. These include issues such as gaps in routes, land/trail maintenance, snow and debris clearing, and interference from motorists who violate the lanes due to lack of enforcement or a lack of education regarding their existence and use.

Figure 5 Physical or psychological barriers are disincentives to the use of active transportation facilities.

The GTHA municipalities have a long way to go in terms of providing extensive and connected bicycle networks. The density of bike facilities provides a good measure of the extent of the network, particularly in built-up areas. A comparison of the density of utilitarian bike facilities across the GTHA with other Canadian, American, and European urban areas shows that even the City of Toronto falls behind in providing infrastructure that supports cycling for daily needs.

Exhibit 4: Density of Utilitarian Bike Facilities

Sources: City of Chicago DOT website (2005); New York City Department of City Planning, Transportation Division (2007) New York City Bicycle Lane and Trail Inventory; City of Vancouver website (2007); Pucher, J. & Buehler, R. (2008) Making Cycling Irresistible: Lessons from the Netherlands, Denmark, and Germany; Clean Air Partnership (Nov. 2007 – Draft) The State of Active Transportation: Greater Toronto, Hamilton and Beyond, prepared for Metrolinx; City of Amsterdam.

4.2 Current Behaviour

All GTHA residents engage in active transport as part of every trip, whether for recreational or utilitarian purposes. Utilitarian travel refers to transportation to an activity (e.g. school), while recreational travel is for the activity itself. This distinction is of greatest significance for active transportation, as motorized transportation is typically dominated by utilitarian purposes.

Walking is by far the most popular active transportation mode due to the amount of supporting infrastructure provided and the lack of a need for any equipment/vehicle. It is the most basic form of transportation. Bicycling is the next most popular, although there is only one bicycle trip made for every eight walk trips across the GTHA. Walking and cycling in the GTHA currently account for just under five per cent of all work trips and approximately 32 per cent of all school trips. [1] The amount of active travel by GTHA residents corresponds to the land use patterns, and the amount and manner in which the active transport infrastructure is provided throughout each area. For example, approximately eight percent of Toronto residents walk or cycle to work compared to just over five percent of Hamilton residents and under two percent of Peel residents. [2] By comparison, over 15 percent of residents in Victoria, B.C. commute by active modes. [3]

However, the role of active transport is usually underestimated. The main data source for transportation activity in the GTHA, the *Transportation Tomorrow Survey*, only records walking trips made to work and school trips. Therefore, if someone walked to the grocery store, this would not be counted; however, if that same person made the trip by car or bike, it would be counted as a trip. As a result, it is difficult to report on the amount of walking and cycling in the GTHA. With improved collection of data regarding walking and cycling activity, the number of trips by active modes would likely be higher.

1 Based on 2006 *Transportation Tomorrow Survey*, which only considers residents 11 years of age and older.
2 Ibid.
3 Statistics Canada 2001 Journey to Work Data.

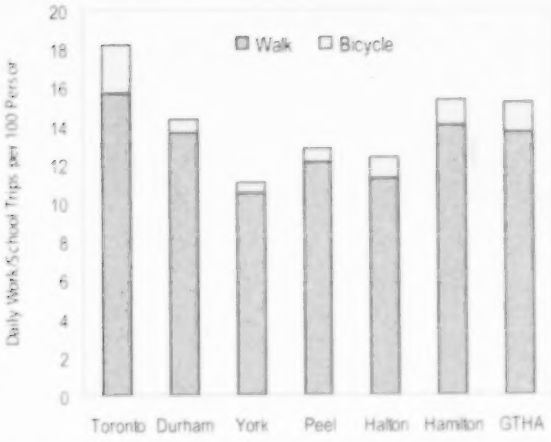


Exhibit 5: Variation of Active Transportation Levels Across GTHA Municipalities

Source: 2006 Transportation Tomorrow Survey

The more mature and sustainable land use and street systems in the cities of Toronto and Hamilton and the area municipalities of Mississauga and Oshawa, among others, influence the variation of active transportation among single- and upper-tier municipalities in the GTHA, as shown in the graph above. As described earlier, walking and cycling are more feasible in compact, mixed-use areas with grid street patterns and extensive sidewalks. The larger volume of cycling trips per 100 persons in Halton, relative to the other three regional municipalities, is likely due to the extensive cycling path network in that regional municipality.

4.3 Potential Market

The potential market for active transportation in the GTHA is very large. If the potential market is conservatively assumed to be any trip that would take less than 30 minutes to walk (approximately two kilometres) or cycle (approximately five kilometres), there were over 1.5 million work and school trips each day alone that could have been made by active transportation in 2006 in the GTHA, but were not [4]. This represents approximately one-third of all work and school trips – as shown on the graph at right.

Results of the proportion of short distance trips that are currently being made by walking and cycling provide some important insights. Data across the GTHA show that most students will walk if their school is within one to two kilometres. However, less than half of workers who live in close proximity to their place of employment commute by foot, with the likelihood decreasing in more suburban municipalities. Would more of these people walk the relatively short distance to work if they had to pay for parking while walking became more comfortable, interesting and direct? There are many initiatives that could encourage more of these short-distance trips to be made by active modes, such as "Walking School Bus" programs, and shower and change facilities.

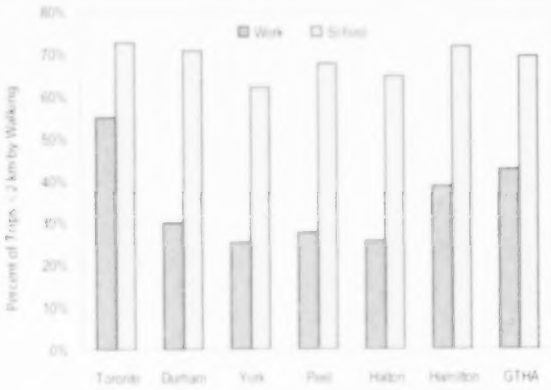


Exhibit 6: Current Walking versus Potential Market for Work and School Trips

Source: 2006 Transportation Tomorrow Survey

Harnessing the Potential for Walking: "The Walking School Bus"

A walking school bus is a community-based approach to promote walking to school in a safe manner. Children walk in a group, under adult supervision, and pick up other students on the way to school. In Brampton, the Morton Way Public School tried such a program for a week in 2003, along with an "extra recess incentive" to encourage participation, and saw remarkable success. The positive response encouraged the school to permanently establish the program one day every week and during Environment Week. The school estimated that an amazing 90 per cent of the school children in grades one to five began walking to school regularly once the walking school bus program was introduced, compared to 40 per cent previously.

4 2006 Transportation Tomorrow Survey.

Looking beyond just work and school trips, total short-distance auto trips (i.e., less than two kilometres) account for approximately 15 per cent of total daily trips or nearly 1.8 million trips per day. Areas of concentration of these short-distance auto trips are shown in the map below. The concentration of these trips in the GTHA is displayed. This map illustrates that short-distance auto trips are distributed all across the GTHA, not just across central Toronto. Therefore, there is potential to increase travel by walking and cycling all across the region.

Exhibit 7: Distribution of Short-Distance (< 2 km) Automobile Trips

Source: 2006 Transportation Tomorrow Survey and 2006 network of York Region Emme/2 model.

Results for cycling indicate that there is great potential to encourage more trips by cycling. A small proportion of employees and students cycle to their destinations. This is in part due to the lack of supportive infrastructure and general safety and comfort concerns. For example, a study of the 2000 U.S. census found that, in most cases, urban residents within 800 metres of bike trails are three times more likely to bike to work on average than a typical member of the community. [5] Toronto, with the highest density of utilitarian bike facilities, supports the most cycling for work trips of less than five km.

Since short distances facilitate walking and cycling, it is important to continue to promote shorter distances between origins and destinations. This includes promoting a mix of complementary uses in new and existing communities together with higher densities, designing infrastructure to minimize barriers and empty space (not including parks which are destinations themselves), and creating shortcuts for pedestrians and cyclists.

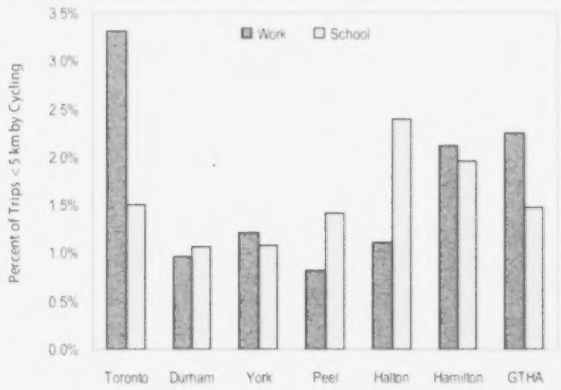


Exhibit 8: Current Cycling versus Potential Market for Work and School Trips

Source: 2006 *Transportation Tomorrow Survey*

4.4 Existing Policies and Plans

Despite the large differences in the amount of walking and cycling across the GTHA, active transportation is receiving increased attention at the policy and planning levels. Many municipalities have recently developed specific plans related to walking, cycling, and trails. In addition, processes are underway to develop or update active transportation plans for Durham Region (Regional Cycling Plan), Oakville (Active Transportation Master Plan), Toronto (Walking Strategy), Peel Region (Active Transportation Master Plan), Burlington (Cycling Master Plan), and Hamilton (Shifting Gears Update).

There is also increased understanding among municipalities that the quality of the pedestrian or cycling environment depends on more than just bike lanes, sidewalks, and trails. Most GTHA municipalities' Official Plans contain policies related to improving conditions for walking and cycling by stressing more compatible land use and development, walkway and bikeway networks, transit, roads, and TDM. Other departments such as Public Health, Parks and Recreation, and Forestry also have a stake in fostering walking and cycling. In a recent survey of municipalities in the GTHA, all 21 responding

5 Morris, H. (2004) Commute Rates on Urban Trails: Indicators from the 2000 Census. Journal of the Transportation Research Board, 1878, pp 116-121.

municipalities stated that they routinely consider the needs of pedestrians and cyclists during their decision-making processes."[6]

Municipality	Plan	Date
Ajax	Bicycle and Leisure Trail System Plan	2006
Oshawa	Cycling Network Study	1999
Pickering	Trails and Bikeway Master Plan	1996
Durham	Regional Trail Network	2006
Toronto	Draft Toronto Walking Strategy	2007
Toronto	Bike Plan	2001
Toronto	Sustainable Transportation Initiatives: Short-term proposals	2007
York Region	Pedestrian and Cycling Master Plan	2007
Markham	Cycling Master Plan	2007
Vaughan	Pedestrian and Cycling Master Plan	2007
East Gwillimbury	Trails Master Plan	N/A
Caledon	Trails Master Plan	2003
Mississauga	Multi-Use Recreational Trail Master Plan	2001
Oakville	Cycleways Master Plan	1985
Burlington	Multi-Use Pathways and Bikeways Plan	1997
Hamilton	Cycling Master Plan	1992
Hamilton	Draft Trails Master Plan	2007
Hamilton	Cycling Network Strategy Working Paper	2007

Exhibit 9: Existing Active Transportation Plans in the GTHA

6 The State of Active Transportation: Greater Toronto, Hamilton and Beyond, Draft Report, November 2007, prepared for the Metrolinx by the Clean Air Partnership (CAP).

5 Recent Successes

The following initiatives demonstrate success in promoting active transportation in the GTHA and mark a departure from common practice. They demonstrate that significant progress is possible within our common set of regulatory and fiscal circumstances.

5.1 Hamilton: Improving Walking Conditions One Street and a Time

For the past decade or so, the City of Hamilton has been implementing changes to its downtown streetscapes. About one-quarter of downtown streets have received a full makeover. Features include new and wider sidewalks, a leading edge urban Braille system, landscaping and street furniture. In 2004, the City converted two of its main streets from one-way to two-way operation as a means of slowing traffic. Despite predicted reductions in the level of service for automobiles, local businesses are reporting increased economic activity. There is now an emerging arts district where the conversion occurred.

Figure 6 New design elements in a downtown Hamilton streetscape.

5.2 Markham's Aggressive Approach to Building Bicycle Lanes

Phase I of the Town of Markham Cycling Master Plan, completed early in 2007, established an on-road neighbourhood route network. It links urban areas within the town for utilitarian use, but also supports recreational use by including looping opportunities. Phase II has since commenced with a goal of constructing a more comprehensive and connected network. The goal of this plan is to provide the infrastructure so that convenience and/or safety issues no longer inhibit residents from cycling or cycling more often.

To date, the plan has established 112 km of signed on-road routes and lanes. [1] The town plans to invest $6 million over the next six years to add another 123 km, with the funding coming from federal gas tax revenues. [2] The proposed final network will comprise about 390 km of on- and off-road routes at a cost of about $19 million. It will ensure that all residents will be within a five-minute bike ride from the network, will provide connections to all major attractions, will bridge major barriers to cycling, will connect to networks in adjacent municipalities, and will encourage bike storage and shower facilities, and workplaces.

5.3 City of Toronto Bike Parking Standards

In order to truly promote cycling as a transport mode the City of Toronto has recognized that, as with cars, bicycles need to be stored when not in use and, therefore, require secure and convenient bicycle parking at all cycling destinations. In 1993, it amended its zoning by-law to require such parking for all new residential and commercial buildings over 2,500 m^2 within the former City of Toronto. For example, a new residential building is required to provide 0.75 spaces per unit, while a new commercial building needs to provide one space per 1,250 m^2. In addition, showers and change rooms, at least one for each gender, are required for commercial over 2,500 m^2. These requirements have not yet been applied to most other parts of the city or elsewhere in the GTHA.

1 Smart Commute Website
2 Markham news release, June 9, 2007

Figure 7 An example of bicycle parking in a Toronto parking structure.

5.4 City of Toronto: St. George Street Road Diet Retrofitting

The portion of St. George Street that runs through the University of Toronto campus was placed on a permanent "road diet" in 1997. At a cost of $6 million, the street was reduced from four lanes to two, the sidewalks were widened, and pedestrian crossings, bicycle lanes, architectural features and greenery were added. Since implementation, traffic speed and collisions have decreased, bicycle volumes have increased while car volumes stayed the same. University employees have noted a significant improvement in the area's attractiveness.

Figure 8 View of St. George Street "road diet," Toronto.

5.5 Other Successes

Other successes include the increasingly common practice of ordering new buses equipped with racks while retrofitting the existing fleet throughout the GTHA or the large number of effective and popular programs like Active and Safe Routes to School or Bike Week. The provincial government has also lifted the provincial sales tax on bicycles as of December 1, 2007.

6 Barriers to Active Transportation

As can be observed from the travel patterns and urban structure of the GTHA, we have been very effective in building the vision of a car-oriented metropolitan area. The comfort and speed afforded by cars – except in high traffic density corridors – is certainly difficult to contest. Even as we recognize that making more daily trips on foot or by bicycle is good for our health, pocketbooks, air, and environment, there are a variety of barriers to making this a practical choice for a large proportion of GTHA residents.

6.1 Land Use and Physical Barriers

Without daily destinations within walking or cycling distance, many residents of the GTHA do not have the choice of travelling by active modes for regular tasks. This is the result of conventional approaches to land use that separate living, shopping, working, and recreation. Even if distances are walkable, in some cases the inconvenience of walking to safe street crossing points or a lack of sidewalks may lead to a drive rather than a walk.

In addition, man-made and natural barriers may limit access by walking and cycling. This includes rail tracks, controlled access highways (e.g. Highway 401, Gardiner Expressway) and natural barriers, such as the Niagara Escarpment and river valleys. Innovative approaches to overcoming such barriers (e.g. an inclined railway up the Escarpment in Hamilton or new pedestrian bridges across 400 Series Highways) may lead to many more walking and cycling trips.

Barriers also exist with respect to establishing active transportation facilities in rail and hydro corridors. Railroads and Hydro One have legitimate safety and liability concerns regarding other uses in their corridors. A legislative framework is currently missing to ensure adequate coordination between land and infrastructure owners or to establish a framework for eventual cost-sharing or compensation.

6.2 Limited Resources and Local Priorities

While active transportation plans may be in place, progress on expanding the network may be hindered by lack of resources. Municipalities often cite limited financial resources as a barrier to the development of facilities for active transportation, particularly in light of the near absence of active transportation partnerships and sustainable funding from senior levels of government. Even if such facilities can be built relatively inexpensively as part of road reconstruction projects or through development charges, for example, the lack of budget for maintaining them may discourage implementation. While the annual budget for road infrastructure is in the hundreds of millions of dollars across the GTHA, sidewalks, cycling infrastructure, and pedestrian initiatives receive less than five per cent of these funds.

The GTHA municipalities differ in their approach to funding walking and cycling infrastructure. Some provide funds for cycling infrastructure on an opportunity basis, while others provide a regular annual budget to build such facilities. For example, Hamilton provides $300,000 per year for cycling infrastructure, which is enough for approximately 15 km of new on-road cycling facilities using existing roadways or 1.5 km of off-road pathways. Even this limited budget has not been spent in recent years due to a lack of resources to plan and implement cycling facilities. Similar situations exist in most other municipalities, such as in Toronto, where the $5.5 million cycling budget is approved but faces other implementation hurdles.

One of the challenges with implementing active transportation facilities is limited staffing expertise and resources. Most municipalities have developed staff resources around roads and transit, often employing dozens of road designers. Yet, little effort has been given to developing staffing capabilities to plan and design cycling facilities.

The roads-focused transportation mindset often carries through to maintenance and operations practices. For example, bike paths are not typically cleared of snow in the winter in most municipalities, and sidewalks tend to receive less priority than roads when it comes to maintenance. Fortunately, municipalities are now placing a higher priority on financing and maintaining active transportation facilities.

6.3 Institutional and Regulatory Barriers

An open and transparent process for considering active transportation issues and needs does not exist within many institutional organizations. Often, decisions tend to be made on the basis of reducing short-term costs. The location of schools is one example, where land availability more than likely outweighs factors such as what proportion of the student population will be able to walk to school. Schools are also becoming larger, leading to greater distances between home and school.

Private corporations similarly may make decisions on location without considering the potential for employees to walk, cycle or take transit to work.

Underlying many institutional barriers are liability issues. While road design standards have evolved to the point where engineers are able to defend designs with confidence, the same cannot be said for walking and cycling facilities. Why is it that the City of Victoria can provide textured cross-walks without extensive traffic control (e.g. stop signs or signals), yet Ontario cannot? How is it that we cannot build a traffic lane that is less than the standard width, but it is acceptable to "squeeze in" a bike in whatever space is left over, or not provide one at all? Many of the answers are related to the fact that active transportation is still considered an inferior or fringe mode of transportation or even a frill. Decision-makers seem reluctant to experiment with change or accept new and different risks, however minor.

As a related issue, the cost of the simplest improvements like the addition of bike lanes or sidewalks in existing communities can exceed the cost of design and construction because of the complexity of the process in securing the necessary approvals and conducting required public consultation events.

There must be an effort to address what would seem to be simple legislative issues such as the provisions in the *Highway Traffic Act* requiring buses beyond a certain length (e.g. those with bicycle racks) to apply annually to the Ministry of Transportation, Ontario for a special vehicle configuration permit. Provincial regulations also prevent buses from crossing municipal boundaries with bike racks.

Institutions such as the Transportation Association of Canada (TAC) and the Institute of Transportation Engineers (ITE) are starting to address institutional and legislative challenges by improving design standards and providing training for practitioners involved in the planning and delivery of transportation systems. However, these initiatives must be translated to actual projects at the local level. There should be an acknowledgement that there will be risks in implementing new types of infrastructure, and these risks should be shared among different levels of government.

In addition to these broad institutional barriers, challenges remain related to the coordination of planning efforts between local and upper tier municipalities. Split responsibilities can remain for streets of various sizes, health promotion and recreation, resulting in a leadership vacuum in promoting and implementing active transportation infrastructure and practices. York Region is one of the municipalities in which this disconnect existed, and is starting to be addressed through partnership initiatives.

Finally, operational practices often hinder active transportation. For example, limited winter maintenance or even the widespread practice of removing snow on streets before sidewalks, or piling snow in a way that impedes walking and cycling.

6.4 Social Barriers

Social barriers to active transportation exist at many levels, starting with school transportation. Many parents cite safety concerns as the one of the reasons why children need to be driven to school as opposed to letting them walk, adding traffic and reducing the number of people on the sidewalks who could otherwise contribute to a safer and more secure pedestrian environment. Yet the risk of a child developing diabetes from inactivity should be weighed against the risk of getting harmed on the way to school. Similar concerns and parent pressure lead school boards to adopt relatively low eligibility thresholds for school bus pickup, even for teenagers who could walk or cycle.

Cycling is often perceived by many people as high-risk activity. Where cycling is safer and is perceived to be safer, the number who cycle is higher. The Netherlands has the lowest fatal and non-fatal bicycle injury rate of OECD countries—its share of trips by bicycle is 27 per cent. By comparison, the USA has the highest fatal and non-fatal injury rates with bicycle share of trips at one per cent [1]. Safer cycling encourages more people to cycle, and as more people cycle, there is more cycling advocacy and more bicycle infrastructure built.

In communities across the GTHA, residents are requesting that footpaths or shortcuts be closed for fear of crime. As a result, direct pedestrian and cycling routes are lost and residents drive over short distances. Residents often oppose the construction of sidewalks because of the cost or the loss of front-yard space.

Social barriers are not limited to the general public and still exist within the transportation, planning and development professions and among elected officials.

1 Pucher and Buehler, Making Cycling Irresistible: Lessons from the Netherlands, Denmark, and Germany: 2007.

Statements such as "Why should we include bike lanes? Nobody bikes around here" are not unusual. These attitudes are, again, self-perpetuating.

The greatest potential to change societal perspectives towards active transportation exists with children and youth, before habits are ingrained. Recent successes have been emerging as a result of active and safe routes to school. For example, Morton Way Public School in Brampton initiated a Wednesday Walk to School Program, and they claim to have achieved up to a 90 per cent participation rate. The International Walk to School Day has raised awareness of the benefits of walking to school. One may question, however, why walking to school should be considered an activity that requires international awareness and promotion.

6.5 Private Sector Involvement

A final area in which barriers exist is with the private sector. Many actions that the private sector can take to help promote active transportation are relatively inexpensive, such as providing on-site bike racks and lockers or allowing employees who bike to wear more casual clothes. But in most cases, these initiatives are seen as added burdens as opposed to basic requirements. It is not uncommon for a developer to pay $150,000 to install a new traffic signal, but providing indoor bike parking is often met with resistance. Similarly, road widenings and intersection improvements are often the only solutions put forward to address the impacts of a new development. At the same time the impacts of these improvements on active transportation modes are rarely considered.

With the private sector, many issues become a matter of trade-offs. For example, allowing for narrower traffic lanes (which slow traffic and improve the pedestrian environment) saves on the cost of paving, which can then be used to improve pedestrian facilities. As a minimum, both municipalities and the private sector have a responsibility to present and consider these trade-offs.

Figure 9 Secure, covered bicycle parking.

7 Innovative Practices Elsewhere

Cities in North America and abroad are implementing innovative strategies to encourage travel by active modes. A sampling of innovative practices from around the world is presented, with the intention of helping readers imagine what might be achievable in the GTHA. These practices relate to improving the bicycle network, intersection design, shared space street design, integrating walking and cycling with public transit, and funding models.

7.1 Bike Networks

Bike Corridors

Vancouver, B.C. has looked beyond bike lanes to build its cycling network. To avoid conflicts on busy streets, Vancouver has dedicated streets adjacent to major arterials as bike priority corridors. Vehicular through-traffic is discouraged by the heavy use of traffic calming and traffic diverters that do not affect cyclists. Where these corridors intersect major streets, bike priority traffic signals and pushbuttons have been installed. A similar approach to shared-use facilities is also practiced in Berlin, Germany, where driving is limited to 30 km/h and motorists must not interfere with or pressure cyclists. In Vancouver, the introduction of these traffic calming features has also worked in conjunction with a Green Streets program by creating countless spaces for small volunteer gardening projects. The successful Vancouver system is truly a network that continues to expand its extensive use of Skytrain corridors, bikeways, "greenways" and bike lanes, while simultaneously enhancing the city's public space for pedestrians.

Figure 10 Traffic diverter along Vancouver bikeway allows access to cyclists, but prevents vehicular through-traffic.

Figure 11 Bicycle pushbutton allows cyclists to activate the traffic signal without dismounting from their bikes.

Bike Lane Design

The definition of what constitutes a bikeway can vary considerably. Shared on-street facilities, for example, could mean anything from simple lane markings to traffic-calmed bike corridors. Ultimately, design can make or break the usefulness of a bikeway. Over the past decade, expansion of the bike network in the Netherlands has actually slowed as the cities' focus shifts to improving the design of facilities. Bike lanes, for example, are often wide enough for two cyclists to ride side-by-side. Facilities in Berlin are almost all segregated from traffic. As a result, intersection designs have improved dramatically.

7.2 Intersection Design

Nowhere are the conflicts between cyclists, pedestrians, and motorized traffic more apparent than at intersections. Even spectacular bike lanes or trails are useless if they fail at intersections.

The concept of bike boxes has been around for decades, but has appeared in North America only recently (see image on next page). Essentially the vehicle stop line is moved away from intersections to leave room for cyclists to queue on a red light. By moving cyclists in front of vehicles, cyclists can make left turns without interference and their visibility to motorists is dramatically improved. Some also argue that they improve pedestrian safety since motorists are not able to turn right on a red light. The bright colours usually seen in bike boxes can also be used to highlight bike lanes and encourage caution as people pass through intersections.

Figure 12 Bike boxes move cyclists in front of vehicles at intersections, making turning movements easier for cyclists and improving their visibility to motorists.

When segregated bike lanes are placed on the right side of parked vehicles or along half of the sidewalk, it can be very difficult for turning motorists to see oncoming cyclists at intersections. As a result, planners in several European cities will often use special traffic signals or realign crossing bike lanes further from the intersection. The latter is a minor inconvenience for cyclists, but helps improve their chances of being seen by right-turning vehicles.

Figure 13 Separate traffic signals for bicycles.

To improve pedestrian crossings, designers are trying different surface treatments to expand the sensory cues signalling motorists to use caution. Unconventional street geometry is also becoming more common as designers better understand how to influence behaviour without relying on street signs. Simple adjustments include curb extensions to minimize crossing distances and bollards or traffic islands to sharpen turning radii and slow down turning vehicles. Some contemporary approaches to street design in Europe are notably more radical than common Ontario practice.

Figure 14 Street retrofitted with surface treatment and speed hump to enhance safety of pedestrian crossing.

7.3 Shared-Space

The concept of shared street space, commonly known as a Woonerf or "Home Zone", grew from attempts to quantify a street's environmental capacity based on measures of noise, pollution, social activity, pedestrianization and visual aesthetics. This led to the notion that certain environmental capacities could safely permit streets with mixed uses. Such streets are typically narrow, lack curbs and clear sightlines, and have obvious gateways, very low speed limits, street trees, community gardens, and varied surface treatments. Until recently, this approach was not taken seriously in North America, despite having been practised for decades in countries like Holland, Germany, England, Japan, Israel, and Spain.

More recently, the late Dutch traffic engineer, Hans Monderman, has been applying a similar design philosophy to higher-capacity streets by removing all traffic signs and roadway markings. Without signs, those using the street purportedly pay more attention to their surroundings and look to make eye contact more often. Almost counter-intuitively, this ambiguity has resulted in fewer severe accidents, thus challenging our traditional approaches to safe design.

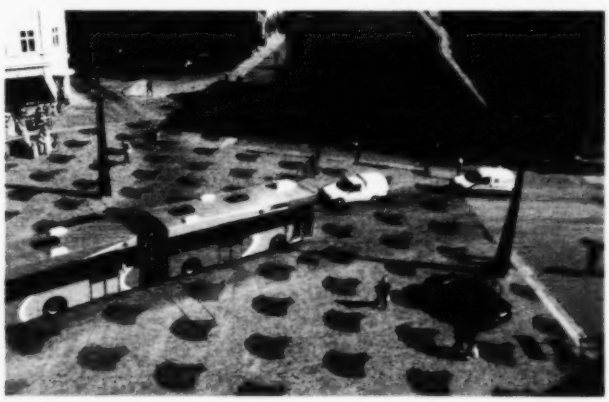


Figure 15 Example of a "Naked Street" – an intersection in which all signals and markings have been removed.

7.4 Rethinking Arterial Roads

One of the biggest challenges ahead revolves around the role of the suburban arterial road – so deeply entrenched in existing development patterns. Portland, Oregon, uses an innovative street classification system that accounts for a variety of dimensions such as bike, pedestrian, transit, freight, traffic, and emergency response needs. A progressive European initiative, ARTISTS, also proposes a new paradigm for thinking about the role of streets which, in identifying diverse needs, argues for broader participation in the processes of changing them. As we reconsider how we build our city streets, there is growing recognition that a wider variety of safe designs are possible, which can better address the diverse needs all users, not only those in motor vehicles.

Figure 16 Surface treatments, lack of curbs, and narrow widths encourage motorists to drive more slowly and allow sharing of street space among all users.

7.5 Integration with Public Transit

The issue of pedestrian access to public transit often slips through institutional cracks, despite most transit users accessing the system by foot. Furthermore, since cycling is ideal for two to five km trips, it offers enormous potential to expand the catchment area of higher-level transit services and dramatically improve their viability in lower density neighbourhoods, while reducing or delaying the need for parking at transit stations. Yet we see limited investment in such facilities at transit stations, or attention paid to the safety and comfort of access routes to stations. Bikes on public transit and bike-racks on buses or trains are not yet widespread throughout the region, particularly on long distance routes.

It is now common practice in many Northern European cities to provide extensive bike parking at stations, such as Berlin's 24,600 bike-n-ride parking spots, the 3,300 spaces at the central station in the small city of Münster or the covered and monitored bike parking lot at the Basel railway station.

7.6 Jumpstarting a Bike Culture with Bike Sharing

For those of us who might need a bike at both ends of the trip, Vélib is a stunning initiative launched in summer 2007 in Paris, France, which saw 10,600 self-serve bike rental stalls distributed across 1,500 strategic public transit

locations. This program was financed by the JCDecaux advertising corporation in return for Paris signing over the income from a portion of on-street advertising. Paris, like Seville in Spain, has integrated bike-sharing with significant improvements to citywide bicycle infrastructure. Closer to home, Vancouver's regional transportation authority, Translink, has just announced it will develop a business strategy for the installation of a similar automated public bicycle system across the region.

Figure 17 A bike locker recently installed in Vancouver.

7.7 Financing from Other levels of Government

The German Federal Government takes cycling very seriously as revealed by the approximately $1.6 billion spent between 1980 and 2000 on bike facilities along highways. Recently, funding has increased as they now spend $146 million annually on bikeway extensions, cycling research, and demonstration projects. With one-fifth the population, the Dutch Central Government is arguably even more aggressive, given the $88 million it allocates to cycling each year. [1]

In contrast with Québec and British Columbia, GTHA municipalities receive little support from provincial government or regional transportation bodies for active transportation. The *Ministère des Transports du Québec* (MTQ) has budgeted $98.6 million toward cycling facilities since 1996, 23 per cent of which was provided to municipalities under cost-sharing agreements. In particular, the MTQ focused on the completion of a 4,000 km provincial-scale bike network, La Route Verte, which was inaugurated this past summer. A further $22.6 million was contributed to municipalities by other Québec ministries. [2]

The B.C. Ministry of Transportation has also invested heavily in cycling facilities. Since 1995, it has contributed $17.5 million for cycling infrastructure to municipalities under cost-sharing agreements and $1.7 million is available for the 2007-2008 fiscal year. Under similar cost-sharing stipulations, municipalities are set to receive $40 million in funding for capital projects by 2011 to implement programs for people with disabilities (Victoria has already been awarded $585,000 to reconstruct an arterial road with bike lanes and sidewalks). Vancouver's regional transportation agency, Translink, also allocates $6 million annually to its cycling program, which includes the bike facilities on a bridge connecting Vancouver to Richmond, bike lockers at stations, and instructional courses. Again, the program is based on cost-sharing agreements with municipalities. [3]

1 Pucher, J. & Buehler, R. (2008) *Making Cycling Irresistible: Lessons from the Netherlands, Denmark, and Germany.*
2 Clean Air Partnership (Nov, 2007 – Draft), The State of Active Transportation: Greater Toronto, Hamilton and Beyond (Draft), Prepared for Metrolinx.
3 Ibid.

8 Key Opportunity Areas

As illustrated in the previous section, cities in North America and all over the world are reaping the benefits of their innovative programs to enhance the role of active transportation modes. The real lesson from these international examples, however, is that progress is possible when active transportation modes are prioritized at the institutional and cultural level. In other words, a vision for the GTHA of making active transportation modes the *first choice for travel* will not come about simply by building more walking and cycling facilities. A culture of walking and cycling must be fostered. Meanwhile, institutional processes and funding mechanisms should support this culture shift. Therefore, the RTP should include strategies to address the physical, cultural, and institutional challenges to active transportation in the GTHA.

8.1 Target 2x/4x

Currently about six per cent of all daily trips are made by walking and cycling, and only three per cent of commuter trips are made by bicycle. So, while doubling walking and cycling trips as a proportion of all trips may seem like a drastic change for the GTHA, the result would not be considered extraordinary by many standards. Many cities with similar climates as the GTHA already observed 15 per cent of trips being made by walking and cycling, and are striving for more. If we are to achieve a significant change, perhaps doubling walking trips and quadrupling cycling trips as a proportion of all trips should be the goal. This paper has avoided setting of specific targets but readers are encouraged to think about achievable targets to reach in 10, 20 and 30 years, in addition to measures of the total number of trips per person per year and distance travelled. Ultimately, targets for transportation must be rationalized with the very aggressive targets being set for GHG emissions, including the City of Toronto's targets of an 80 per cent reduction in GHG emissions by 2050.

8.2 Reducing Expenditures

It has been estimated that about $1.8 billion dollars will be required annually to preserve, optimize and expand the road and transit system just to keep congestion levels from getting worse [1]. This is for just the trunk transportation systems (expressways, GO Transit, regional roads, Toronto Transit Commission, other municipal transit). Increasing the use of active transportation modes, and thereby eliminating many of the shorter trips which cause congestion on the regional transportation network, could have significant financial benefits. Reducing just 10 per cent of the motorized trips from the transportation network could translate into several hundreds of millions of dollars in capital cost savings per year, which could then be invested in improvements to make active transportation more viable.

Note also that integrating active transportation in the original design is less costly and disruptive than retrofits at a later date – hence the importance of integrated planning and introducing a fixed allocation for active transportation as part of each project.

8.3 Build and Integrate the Network

Strategic investments in the walking and cycling network will help mitigate man-made and physical barriers, connect key destinations, and integrate the network across municipal and regional boundaries. Improvements to the network can be categorized as regional or local in nature, reflecting the need to consider the scale of implementation.

Improvements directed towards closing gaps in the network may focus on the connectivity of the regional network. For example, the Centennial Park Trail in northwest Toronto is a missing link in the Etobicoke Creek Trail that will extend from the Lake Ontario Waterfront Trail through Mississauga, Toronto, Brampton and Caledon, once completed. Another example includes the completion of the downtown Toronto rail corridor as a multi-purpose trail linking western neighbourhoods directly to the downtown. As opposed to the regional-focused approach, improvements can also be directed towards local catchment areas of destinations expected to generate a high level of activity and short-distance trips, such as schools, employment areas, commercial districts, and transportation hubs. In addition to sidewalks, trails, bike lanes, these improvements should consider streetscape improvements, pedestrian amenities (shade trees, benches, etc.), traffic-calming to create a more comfortable environment, and all of the factors that contribute to active communities at the local scale (see "What Makes an Active Community?"). The question of whether expanding and connecting the regional network or targeted local improvements is more important will affect the prioritization of active transportation projects.

Given Metrolinx's role as a regional transportation authority, there is an opportunity to improve and integrate the cycling network across the GTHA. Since each local

1 Adapted from: Funding Transportation in the GTA & Hamilton-Wentworth by IBI Group and Hemson Consulting Ltd., April 1999.

municipality is typically responsible for the planning, construction, and operation of its own walkways, cycling lanes and trails, achieving an integrated network requires coordination from both upper-tier municipalities and regional bodies, such as Metrolinx. York Region, for example, has proposed a Municipal Partnership Program to provide funding for the construction of municipal and conservation authorities' pedestrian and cycling infrastructure that support a regional scale network. More of such initiatives are needed.

Metrolinx can also play an important role in the development of facilities of regional significance. These projects, such as a "lake-to-lake" trail from Lake Simcoe to Lake Ontario or a Lake Ontario trail connecting Durham to Hamilton, would act as network spines into which local facilities could feed for cross-regional cycling trips. They would also serve as high-profile flagship projects that could generate excitement around travelling by active modes. Metrolinx can also champion the introduction of bike trails in transit corridors and over time, champion and implement the vision of a tightly woven and fully interconnected trail network throughout the GTHA.

All levels of government have a role to play in improving the network. Cost-sharing programs with upper-tier municipalities, the province, and the federal government can go a long way to ensure that planned walking and cycling facilities are actually built and contribute to an integrated regional active transportation network.

8.4 Support Mobility Hubs

The *MoveOntario 2020* initiatives outline a set of 52 potential transportation investments that will radically enhance the supply of higher-order transit in the GTHA. The success of these investments will largely be determined by the accessibility and convenience afforded by these facilities. Appropriate access to stations by foot and bicycle is a key component of this success. Thus, the catchment area of rapid transit stations is a natural focus for walking and cycling improvements. It is typically assumed that people are prepared to walk approximately 800 m to access rapid transit, which provides a rough guideline for defining the catchment area. This includes appropriate access pathways, shelters, and bicycle storage, at a minimum. Many more potential initiatives are outlined in Appendix A.

Mobility hubs include the concept discussed in Green Paper #2 to design rapid transit stations and the surrounding land use in a way that maximizes the ability of the area to generate ridership, reduces automobile usage, and encourages trips on foot and by bicycle. They are envisioned as areas with a concentration and mix of uses complemented by seamless integration of many transportation modes. A key indicator of success for mobility hubs is whether the core transit station and the immediate surroundings of buildings, public spaces, and streets are intensively used by pedestrians and cyclists. The active transportation and mobility hub elements of the RTP are directly intertwined.

Many of the policies required to support the development of mobility hubs are not yet in place at the municipal level. These include Official Plan policies and land use by-laws dealing with the location of new employment, maximum densities, requirements for parking, and stipulations for walking and cycling infrastructure. Attention must be paid to preventing moves that may actually impede pedestrian and bike circulation to and around mobility hubs, including road and intersection widenings.

Appendix A outlines a number of potential initiatives directed at improving conditions for walking and cycling around mobility hubs.

8.5 Leverage Partnerships and Improve Outreach

Interest in encouraging walking and cycling is building across social, environmental, and economic fronts, and with good reason. In 1999, about $2.1 billion, or 2.5 per cent of total direct medical costs in Canada, were attributed to physical inactivity.[2] Health organizations are promoting design principles for more walkable communities. Environmental groups are encouraging active commuting to reduce transportation air emissions. Seniors groups and parents are advocating for traffic calming and sidewalks to ensure safe walking conditions and routes to school. Neighbourhood associations are working to protect and maintain public spaces that support walking and neighbourhood interactions. Municipalities are beginning to incorporate bicycle parking and amenities (e.g. showers) requirements into zoning by-laws. What would happen if all, or even some, of these voices could unite to support the RTP and the active transportation component, in particular?

Creating a culture that embraces active transportation for short trips will require the appropriate facilities to be supported by promotional campaigns delivered at many levels including the community, neighbourhood, school, and employment levels. Strategic social marketing

2 Katzmarzyk, P., Gledhill, N. and Shephard, R.(2000) *The Economic Burden of Physical Inactivity in Canada.* Canadian Medical Association Journal. 163(11): pp. 1435-40.

campaigns have the potential to align public and private sector interest in active transportation modes for utilitarian trips. In addition, programs are required to educate pedestrians, cyclists, and motorists regarding safe travel. The City of Toronto, for example, has a well-developed safe cycling instruction program that uses the CAN-BIKE framework; however, each local municipality must currently develop the capacity to deliver this type of programming on its own.

There is a significant opportunity for Metrolinx to build on, coordinate, and support the promotion of active transportation across the GTHA, including financially. There are a variety of organizations that already advocate for and promote active transportation in the GTHA, such as WalkON, Toronto Coalition for Active Transportation (TCAT), Go for Green, the Ontario Cycling Association, and Green Communities Canada. Smart Commute, which promotes TDM at the employer and institutional levels and is funded by Metrolinx, is also an obvious partner. The police, Canadian Automobile Association, and insurance companies can provide resources and support for cyclist, pedestrian, and motorist safety and driving skill campaigns. In addition, school boards and schools are natural partners for promotion and education directed towards children and youth. Through partnerships, these organizations can provide valuable assistance to the RTP's education and awareness component.

8.6 Raise the Profile of Active Transportation

Across the GTHA, limited resources hinder improvements to walking and cycling infrastructure. Even if there is sufficient budget for a particular project, there may be insufficient professional staff to guide its implementation. Only four GTHA municipalities have full-time active transportation coordinators. At least to a degree, these resource constraints are due to the low profile that active transportation holds in many GTHA communities.

How can this profile be raised? Effective champions and effective coordination among the levels of government (including among lower and upper municipalities) are critical to ensure active transportation is integrated into the road design and planning process, and to encourage municipal staff, councillors, and the general public to support active transportation. For example, largely due to Mayor Ken Livingstone's strong leadership on the issue, bicycle use on major roads in London, U.K. rose 83 per cent from 2003 to 2007, thanks to congestion pricing and a six-fold increase in cycling spending during this period.

8.7 Target School Travel

There are many reasons to target school travel in plans to enhance the role of active transportation including health concerns, market potential, the relative ease in targeting schools and students, and the availability of willing partners. The proportion of young people walking and cycling to school in the GTHA is declining as parents increasing choose to drive their children. For example, in Halton and Peel, 42 per cent of trips taken by 11- to 15-year-olds were by car in 2001 compared to 27 per cent in 1986. [3] School trips account for the majority of travel by youth on school days. Therefore, decreasing levels of walking and cycling to school is one of the factors contributing to reduced time engaged in physical activity and higher levels of obesity among Canadian youth. Obesity in youth has increased by 50 per cent over the past 15 years. [4]

There is a strong incentive to increase physical activity among children and youth. An obese preschooler has a 25 per cent chance of becoming an obese adult, while an obese teenager has a 75 per cent chance of remaining obese for life. [5] Fortunately, there is significant potential to influence travel by children and youth, particularly travel to school. This is because schools are generally within walking or cycling distance from home and young people do not have direct access to vehicles. In addition, there are many potential partners including school boards, schools, and teachers. Finally, children themselves are enthusiastic supporters of strategies to encourage more physical activity and healthful lifestyles – almost 75 per cent of Ontario elementary school children said they would prefer to walk or cycle to school on a regular basis. [6]

Initiatives to promote active transportation modes and increased physical activity among children and youth should target all of these potential partners, but particularly the children themselves who are often the most open to change. Existing programs that could be built on and become more predominant in the GTHA include the "Active and Safe Routes to School" program, International Walk to School Month, Walking School Bus, and Cycling School Bus. The concept of school travel planning, in which schools or school boards develop plans for how they will

3 Sustainable Transportation Monitor (2003) No. 9, Centre for Sustainable Transportation.
4 Vail, S. E. (2001) *The Physical Inactivity Epidemic: The Preventative Role of Active School Communities.*
5 Ibid.
6 Ontario Walkability Study (2001) Trip to School: Children's Experiences and Aspirations.

make school travel more efficient (analogous to a school waste management plan), potentially including targets for the proportion of students walking and cycling to school, is receiving increased attention. Green Communities Canada's School Travel Planning Project is a recently initiated project, which just received over $420,000 in federal funding. This project will create a national school travel planning policy, and establish training materials and other tools to support school travel planning at the local level.

All initiatives aimed at raising the profile of active transportation should cater to the unique needs and circumstances of area residents based on place of residence, gender, age, (dis)ability, cultural heritage, etc.

8.8 Reform 'Traffic-Focus' in the Road Design and Development Approvals Process

As can be observed from the travel patterns and urban structure of the GTHA, we have been very effective in building the vision of a car-oriented metropolitan area. While many municipal planners and engineers agree with the concept that cities should support a multitude of mobility options, the "car is king" approach is integrated into many professional design standards and city processes.

Suburban arterial roads provide an illustrative example. Such roads are often the least hospitable for walking and cycling. This is because road design standards were developed very carefully to optimize vehicular traffic flow with designs that encourage much higher speeds than the posted speed, let alone a comfortable speed for pedestrians and cyclists. The effects of road widths, turning radii, intersection spacing, and other design elements on the pedestrian and cycling environment were given little thought. The tide is turning, however. York Region, for example, recently adopted a new Regional Road Standard to allow for the implementation of High Occupancy Vehicle (HOV) and bike lanes on six-lane arterials. Professional bodies, such as the Institute of Transportation Engineers (ITE) have produced handbooks to guide arterial retrofits through context sensitive solutions [7] and Road Diets. [8] Moving even farther from auto-focused road design, shared streets provide an example of how streets can be built to truly support a range of modes.

Regional or provincial standards for active transportation infrastructure, including surfaces and signalization in the private and public realms, would help reduce the cost of implementation, reduce the perception of risk and establish a consistent set of expectations by pedestrians, cyclists and motorists.

Neighbourhood opposition to sidewalks can be addressed through funding, in cases in which special assessments are proposed. Alternative designs achieving equivalent safety and comfort gains for pedestrians can be proposed within the existing right of way, including the concept of "shared street" as discussed above.

Traffic Impact Studies required as part of the approval of major developments prioritize vehicular traffic movements over other forms of mobility, by design. Changing this requirement to *Transportation* Impact Studies that consider the effect of a development on all forms of transportation and future anticipated modal share is an important step in mitigating the effect of new development on the quality of the pedestrian and cycling environment. Moving forward, developer contributions for sidewalks, lighting and bicycle facilities can be required as a condition of their site plan or subdivision approvals.

Figure 18 Placing greater priority on the safety of cyclists and pedestrians.

7 *Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities*, An ITE Proposed Practice. Institute of Transportation Engineers, Washington, D.C. 2006. http://trafficincident.org/bookstore/RP036.pdf .

8 *Road Diet Handbook: Setting Trends for Liveable Streets*. Institute of Transportation Engineers, Washington, D.C. 2006.

9 Looking to the Future

9.1 Where Do We Go From Here?

Few can argue with the convenience afforded by the private automobile. As with any good thing, too much is just as harmful as too little. Somewhere along the way, the individuals responsible for planning and designing transportation systems tended to downplay the basic needs for human-powered transportation relative to those of motorized vehicles. The result is congested roads, car-based and more sedentary lifestyles, high transportation costs, and an energy-intensive transportation system that is very vulnerable to increasing gas prices and possible supply limitations. With more than 40 per cent increases in population and employment anticipated over the next 25 years, what will our mobility options look like in the future?

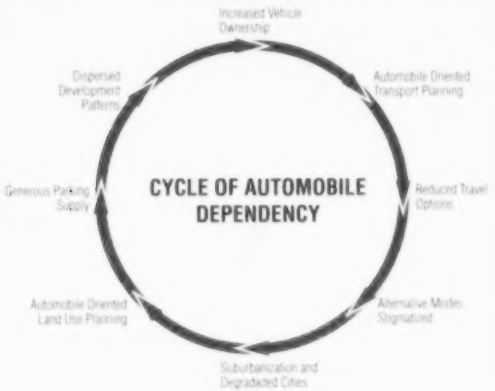


Exhibit 10: How do we break the cycle of automobile dependency?

Source: Litman, T. (2006) *Parking Management Best Practices*. American Planning Association. Chicago, Illinois.

We have choices on how we will shape our region and invest in our transportation system now, over the next 25 years and beyond. The active transportation measures and initiatives that can be applied in the GTHA could be categorized in several ways:

- **Type of measure.** Potential measures include legislation and regulation (e.g. to enable bike racks on buses, more effective deterrents to bike theft), municipal policy (e.g. zoning requirements for bicycle parking), information and education (e.g. individualized marketing), incentives (e.g. tax breaks on bicycles) or disincentives (e.g. road or parking pricing).
- **Target markets.** Potential market segments can be defined by: traveller or trip type (e.g. work commuter, post-secondary students, elementary school students, families); geographic location (e.g. urban, suburban, rural, business park, downtown); and demographics (e.g. youth, elderly).
- **Delivery mechanisms.** Potential mechanisms include transportation management associations, business groups, school boards, employers, developers, public health agencies, social services, land use planners and non-governmental organizations.

The purpose of listing these characteristics is simply to highlight that strategies to promote active transportation may be designed around any one of them (measure, market, behaviour or delivery mechanism) or several of them in combination.

A Vision for Future Transportation Facilities

"The safety and convenience of all users of the transportation system including pedestrians, bicyclists, transit users, freight, and motor vehicle drivers shall be accommodated and balanced in all types of transportation and development projects and through all phases of a project so that even the most vulnerable – children, elderly, and persons with disabilities – can travel safely within the public right-of-way."

Adopted from Chicago's Complete Streets Policy

9.2 Alternative Visions for the Future: Trends, Incremental and Bold

To frame these choices in terms of active transportation, three alternative futures are presented. Each alternative paints a picture of what the future might hold for active transportation in the GTHA, given the current trends, incremental improvements or a bold suite of initiatives to promote active transportation modes. These alternative futures are complemented by a wide range of potential initiatives for the GTHA, as presented in Appendix A.

The key parameters of each vision are:

- Social behaviour;
- Land use;
- Infrastructure;
- Enabling technology;

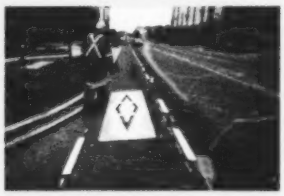
- Level of investment;
- Policy intervention.

These alternatives are intended to stimulate readers to think about where we are heading and consider "whether and how would I/we be better off?" if we planned for a greater reliance on active transportation.

9.3 Alternative Futures

	Trends	Incremental Change	Bold Change
Social Behaviour	Passive education and awareness programs have helped reduce motorists' hostility towards cyclists and pedestrians. Most people still prefer to drive where they can. Hiking is growing as a recreational activity as a result of investments in parks and trails.	Efforts to educate children and other segments of the population help to raise awareness of the benefits of active transportation. Some even feel guilty if they make a short trip by car when they could have walked or biked. Walking school bus programs have taken hold, and the majority of kids now walk or bike to school.	Through intensive social marketing initiatives and public awareness campaigns about health and wellness, most people will choose to walk, bike or wheel for short trips. Those who do so are seen as the norm, as opposed to the exception. Kids would rather walk to school with their friends, than be driven by their parents. Walking and cycling (including to transit) are viewed as the default modes of transportation in most areas of the GTHA.
Land Use	Some new communities have benefited from more compact land use, but few new residential subdivisions go so far as to include retail within a reasonable walking distance. Sidewalks and bike lanes are included where possible, but more often than not, parking is at the front of commercial buildings. Land uses are largely segregated.	Most new communities are compact and contain a mix of uses. Within existing communities, some houses have been converted to convenience stores. The concept of mobility hubs is starting to take off, but many transit centres are still dominated by cars. Retail stores have adequate, but not excess, parking.	New communities place an equal emphasis on access by active transportation and transit, and on vehicular access. Existing communities are retrofit to include green linkages and improved connectivity with adjacent developments. Vehicle parking for commercial developments is designed to minimize impacts on non-motorized modes and care is taken to locate entrances close to transit stops. Car free zones are starting to emerge.

	Trends	Incremental Change	Bold Change
Infrastructure	Some new roadways are planned to accommodate on-street bicycle lanes and off-street trails. On-street bicycle lanes are marked where excess road capacity exists, and on-street parking is not impacted. All new infrastructure is designed to meet accessibility standards, which are now well-ingrained. Retrofit projects focus on areas near transit. Priority for snow clearing is given to cars.	Sidewalks and bicycle lanes are required elements in all new developments, as is bicycle parking. All bike lanes and paved off-street trails are cleared of snow in the winter, at the same time as roads. There are very few places near transit routes and stations where persons in wheelchairs cannot go, but many older communities still have sidewalks on one side only.	A regional, integrated and interconnected network of bike trails is available in the region, so that people do not have to travel far to reach a bike lane, path or trail. In places close to mobility hubs, sidewalks often take up more space than roadways, and some roads are turned over to pedestrians and cyclists on weekends. Road diets emerge as a tool to create bike lanes and improve pedestrian facilities. Many weather-protected bicycle facilities are installed. Newer workplaces include shower and change facilities. Bikes can be taken on transit at all times.
Enabling Technology	Some bicycle and trail maps are easily accessible online, as is information on bike parking facilities near transit. Issues between pedestrians, cyclists, rollerbladers and new modes, such as Segways, have not been resolved because these modes compete for limited road space.	Most information on active transportation is available online. Technology such as Global Positioning System devices are used to update mapping and provide accurate information on travel times by walking or cycling. Electric bikes are not an uncommon sight on bicycle lanes, and their riders respect other facility users.	Technologies such as online trip planners and smart cards are no longer just for transit riders, but are also designed for cyclists and pedestrians. A broad range of electric bikes, Segways and motorized wheelchairs take advantage of new infrastructure designed for human scale modes.

	Trends	Incremental Change	Bold Change
Level of Investment	Expenditures on walking and cycling facilities are typically included as part of larger road and transit projects. Most dedicated expenditures are targeted at maintaining existing facilities. Funds for recreational trails tend to be one-off. 	Investment in active transportation facilities is a key priority and all municipalities have consistent annual budgets for such projects. Targeted investments are made around mobility hubs, transit stations and other areas of high demand. Many projects are funded by multiple levels of government, given their potential to achieve sustainability objectives.	All transportation projects are measured in terms of cost-efficiency and environmental benefits, with active transportation projects being weighed against transit and road improvement projects. Health departments regularly contribute to active transportation projects, anticipating future health care cost savings. Revenues from road pricing and other forms of user pay are directed in part to fund active transportation projects.
Policy Intervention	Directions for promoting and facilitating active transportation are derived from strategic plans, and are suggestive as opposed to legislative. There is no standard approach to planning for active transportation, and most municipalities are required to undertake stand-alone studies and develop unique policies.	Consistent and accepted guidelines on issues such as site design and infrastructure standards are available and regularly used. Bicycle parking standards and requirements for shower facilities for new developments are included in most zoning by-laws.	Developments that do not make provisions for or hinder active transportation modes are not approved. The needs for active transportation modes are considered at all stages of planning and design. Decisions on where to locate schools explicitly recognize modal share impacts. Parking maximums have replaced the traditional minimum parking standards.

9.4 Considering the Alternatives

How will these scenarios of the future be evaluated and transformed into an active transportation plan within the RTP? Through consultation and further study, each alternative future will be expanded into a list of potential initiatives. An initial list is already presented in Appendix A. Each initiative will be assessed based on the three lenses of the RTP: people; environment; and the economy. The options will be further refined and assessed, taking into account the criteria listed below for each of the three lenses.

People

To what extent will this initiative:

- provide convenient access and links for pedestrians and cyclists to major activity nodes, such as urban growth centres (UGCs), mobility hubs, intensification areas and/or major employment areas?
- provide convenient access and links for pedestrians and cyclists to transit?
- improve connectivity within the existing pedestrian and/or cycling network?
- improve and/or provide active transportation choices for interregional travel?
- reduce travel time for people travelling by active modes?
- improve the safety for people travelling by active modes?
- increase awareness of the health benefits provided by active transportation?

The Environment

To what extent will this initiative:

- encourage mixed-land uses and densities that support active transportation?
- prioritize walking and cycling over single occupant vehicle use?
- contribute to air quality and climate change benefits?
- reduce paved area used by roadways and parking areas
- contribute to safer, quieter, more people-friendly neighbourhoods?
- increase awareness of the environmental benefits provided by active transportation?

The Economy

To what extent will this initiative:

- optimize or increase the use of existing pathways/bike lanes/roads?
- increase person-moving and goods-moving capacity – including the efficiency and reliability of movements – along congested corridors?
- offer the most cost-effective transportation initiatives to support economic activities?
- be funded or delivered by innovative means and/or partnerships?
- increase the number of workers commuting by active transportation modes?
- increase awareness of the economic benefits provided by active transportation?

Once the benefits of the strategic initiatives have been evaluated with respect to the three lenses of the RTP, a second evaluation will summarize the initiatives with respect to costs and potential risks. These risks can be categorized into six areas:

- Public and political acceptance: Whether there is the political will to implement the strategy and if the public will accept the measures (two closely related issues);
- Resource and cost requirements: The financial investment required and potential risk for cost over-run or slower-than-anticipated cost recovery;
- Regulatory or legislative barriers: Whether there are any laws or regulations that act as obstacles to a specific initiative;
- Technical feasibility: The risk to implement the initiative from a purely technical point of view;
- Effectiveness: The degree to which the strategy is likely to be successful in providing the projected benefits;
- Implementation risk: Any factor affecting the timely ability to implement the strategy, possibly related to delays with concurrent infrastructure projects or staffing or other resource problems.

Initiatives to improve conditions for active transportation modes will need to be assessed as integrated packages with other elements of the RTP, including transit, mobility

hubs, TDM, roads and highways, and goods movement. There are tradeoffs associated with investments in active transportation that need to be considered. The design of streets is a good example. In built-up areas, there is limited width in the right-of-way so that cars, transit vehicles, pedestrians, and cyclists all vie for scarce existing space. Expanding sidewalks may limit opportunities for bicycle lanes; adding bicycle lanes may mean the removal of on-street parking; dedicated transit lanes may come at the expense of left-turning lanes.

Readers of this Green Paper are urged to review Appendix A as well as the overall concepts and approach to active transportation discussed in this Green Paper.

9.5 Quick Wins

A long-range transportation plan is likely to focus on projects that may take several years or even decades to implement. However, it is important to build momentum and stakeholder buy-in for the plan as early as possible. For this reason, plans often include a short-term program of "Quick Win" projects. Desirable characteristics of Quick Win projects include:

- Implementation time of two years or less;
- Visible, tangible benefits of regional significance (e.g. cross-boundary);
- Low implementation risks; and
- Moderate costs.

Metrolinx has recently committed to a number of Quick Win projects for the GTHA, including two that represent excellent elements of an integrated regional active transportation strategy. This includes the installation of 1,000 new safe, secure, weather-proof bicycle storage spaces at strategic locations across the GO Transit inter-regional network, to complement current bicycle storage initiatives by GO Transit and the City of Toronto, City of Burlington, and City of Hamilton. In addition, bicycle-carrying devices will be installed on 1,000 new-order and existing municipal transit vehicles.

To accompany these approved projects, several other Quick Wins may also be considered:

- Enact bicycle parking requirements. Update the municipal planning approvals process to include mandatory bicycle parking and related amenities (e.g. showers), where appropriate, in new residential and commercial development above a certain size.
- Introduce a requirement for Transportation Impact Studies to be prepared as part of every major development, taking all modes into account and specifically studying the impact on walking and cycling.
- Adopt pedestrian access requirements. GTHA-wide policy on the requirement to accommodate pedestrian access needs in new residential and commercial developments (e.g. sidewalks, pedestrian pathways in parking lots, etc.).
- Launch a bike sharing program. Pilot project to demonstrate effectiveness of bike sharing in dense, transit-accessible areas.
- Create an active transportation portal. Web portal providing maps of on-road cycling facilities and trails across the GTHA and allowing for trip planning by active transportation modes.
- Filling in gaps in the active transportation network. Strategic projects to help fill key gaps in the on-road cycling and trail network across the GTHA.
- Improve data collection. Conduct statistically significant activity-based survey in the GTHA to expand understanding of utilitarian and recreational travel, particularly by active transportation modes.
- Develop model policies. Develop model land use, development, and transportation planning policies (e.g. complete streets) to support municipalities with limited resources for active transportation planning and enhance policy context for active transportation across the GTHA.
- Legislative reform. Review and update the Public Vehicles Act and Highway Traffic Act to change relationships between motorists, cyclists and pedestrians, for example by removing content that may inhibit the installation of bicycle racks on the outside of buses and other obstacles to active transportation.

9.6 Who Should Lead?

Active transportation has traditionally been considered a local issue. Each municipality is typically responsible for the planning, construction, and operation of its own walkways, cycling lanes, trails, and associated facilities (e.g. bike racks). There is increasing recognition, however, that improving the quality of the pedestrian and cycling environment has many regional implications. People are more likely to take transit if they can easily walk or cycle to and from transit stops. There are fewer car trips in walkable, transit-oriented areas, which reduce congestion on the overall transportation network. Meanwhile, bicycle and pedestrian networks that are not continued across municipal boundaries represent a missed opportunity to encourage regional trips by active transportation modes.

There are many ways in which policies and initiatives from municipal, provincial, and federal levels of government affect conditions for walking and cycling on a local scale and beyond. For example, the design of regional roads can either "design-in" or "design-out" active transportation modes. Provincial legislation can protect ecologically sensitive land and encourage the development of recreational trails systems (e.g. Oak Ridges Moraine Conservation Plan). Federal Gas Tax funding provides funds to local municipalities for new walking and cycling facilities.

A bold plan to make active transportation the first choice for travel will require collective participation from all levels of government, the private sector, and other agencies. Municipalities have the most direct responsibility for planning and building the supportive infrastructure and implementing policies to guide the development of walkable communities. School boards can promote walking and cycling to school through appropriate school sizing [1], location and design, and educational programs. Transit authorities can also play an instrumental role to improve pedestrian and bicycle access to public transit, and create beautiful public spaces focused around transit stations. Private development can ensure that the needs of pedestrian and cyclists are at least balanced with the needs of motorists, while employers can adopt policies and programs that promote more sustainable forms of commuting and business travel (e.g. IKEA in London, England, gave a bicycle to every employee to encourage them to ride bikes for commuting, as well as for recreational uses). Senior levels of government can support and guide municipal infrastructure development through cost-sharing, promotional programs, and supportive legislation and policies.

We are on the right track, but more ambitious initiatives from all parties are required to significantly enhance the role of active transportation in meeting daily mobility needs in the GTHA, and as part of a solution to current and future urban transportation challenges.

What role will Metrolinx play among all of these players? While the specifics of Metrolinx's role will be established through the Regional Transportation Plan, several key areas where Metrolinx can provide leadership and support are outlined here. A number of these are related to the Quick-Wins detailed above:

- **Visioning and Championing:** Actively promote the doubling of active transportation as a percentage of all trips as a key objective of regional transportation policy. Champion the creation of an interconnected regional grid.
- **Funding.** Develop cost-sharing programs to help municipalities and transit agencies improve the pedestrian environment in targeted areas and enhance the regional cycling network, including facilities of regional significance. Active transportation funding could be established as a minimum percentage of all road expenditures, and as a percentage of each individual project.
- **Policy support.** Develop model Official Plan policies, land use by-laws (including parking stipulations), and design guidelines to support municipalities in improving conditions for walking and cycling and the development of mobility hubs, etc. In addition, GTHA-wide policies for accommodation of pedestrians and cyclists in new development, and providing a policy context on pedestrian and cycling urban design would give local municipalities more clout in negotiations with developers. The process to install sidewalks and bike lanes in existing communities would also gain from simplification.
- **Education and Outreach.** Metrolinx could help to coordinate and direct the promotion of active transportation modes to target markets (e.g. schools, major employers, seniors) in partnership with municipalities, school boards, and other agencies.
- **Legislative change.** Advocate to the province and federal government for legislative reform to remove barriers to active transportation.
- **Infrastructure improvements.** Invest in improvements to active transportation infrastructure for GO Transit (e.g. secure bicycle parking at stations) and other areas where Metrolinx has direct authority.

1 The trend towards larger schools leads to increased distances between each student's home and the school, and thus impedes walking and cycling.

Appendix A : Potential Initiatives

Number	Initiative
	Policy and Planning
PP1	Develop an active transportation plan in all municipalities
PP2	Reduce minimum parking requirements
PP3	Institute site design guidelines to promote transit and active transportation modes (e.g. building oriented to the street, parking in the rear, etc.)
PP4	Require secondary plans, area and corridor transportation plans, and site plans to prioritize the needs and safety of all non-single-occupant-vehicle modes
PP5	Require bike parking, lockers, and showers for new development as part of the municipal approvals process
PP6	Set maximum parking limits and encourage shared-parking facilities
PP7	Amend Official Plans to support *Places to Grow* and require compact, mixed-use development near key transit corridors and Urban Growth Centres
PP8	Adopt form-based zoning approach to mandate desired urban design characteristics in land use by-law
PP9	Require school boards and individual schools to develop travel plans that set targets for the proportion of students travelling by active transportation modes
PP10	Require development around schools to consider the Centre for Sustainable Transportation's Child and Youth Friendly Land Use and Transport Planning Guidelines
PP11	Develop criteria for minimum quality of the pedestrian and cycling environment surrounding institutional facilities and other main destinations, such as hospitals, seniors homes, schools, and shopping malls
PP12	Institute licences for commercial parking spaces and limit the provision of free parking
PP13	Work with the federal government to mandate a "cash-out equivalent" instead of a free or subsidized parking benefit, and to tax all parking benefits
	Development
DV1	Require new development required to provide walkable distances to transit stops for most residents (e.g. 90 per cent, 95 per cent)
DV2	Locate all public buildings or buildings built with public funds close to transit services and feature exemplary bicycle and pedestrian access and amenities
DV3	Adopt guidelines on the location, design and size of schools to maximize active transportation
DV4	Require developers to build sidewalks, lighting and bicycle facilities as a condition of their site plan and subdivision approvals with a consistent approach throughout the region
DV5	As part of the development review process, review walkability and cyclability according to objective standards during the development review process
DV6	Broaden Traffic Impact Studies to *Transportation* Impact Studies that consider the effect of development on all modes
DV7	Champion changes to the *Highway Traffic Act* to remove obstacles to transporting bikes on buses

Number	Initiative
	Policy and Planning
DV8	Require developer to ensure a high-quality pedestrian environment by providing shade trees, street furniture, lighting, etc.
	Streets
ST1	Develop new Regional Road Standard for road-widening to accommodate improved transit service, on-road cycling
ST2	Give priority to maintenance and snow clearing of primary cycling streets, bicycle paths, and sidewalks
ST3	Conduct active transportation audits on existing streets and intersections to identify existing gaps and deficiencies to focus and prioritize improvements
ST4	Implement Road Diets (strategic narrowing and redesign) in high pedestrian areas
ST5	Require all street-widening and reconstruction projects to evaluate how to incorporate the needs of all modes
ST6	Pilot innovative road designs during road reconstruction (e.g. shared streets)
ST7	Develop policies and programs for traffic calming in and around key destinations for pedestrians and cyclists (e.g. schools, residential neighbourhoods, local retail), with specific impact evaluation on walking and cycling
ST8	Pilot the use of cyclist-only yield signs at vehicle stop signs along major bicycle routes to provide cyclists with a speed advantage
	Transit
TR1	Install bike racks and storage at all higher-order transit stations
TR2	Install bike racks on all buses
TR3	Charge for parking at Park-and-Ride lots and use funds to improve bike facilities
TR4	Redevelop park and ride lots into higher-density, mixed-use development
	Mobility Hubs
MH1	Develop walking and cycling facilities at all mobility hubs
MH2	Pedestrian-first policies and plans in development of Urban Growth Centres
MH3	Ensure most residents in Urban Growth Centres are within 400 metres of walking, cycling, and transit facilities
MH4	Institute site plan control that gives priority to pedestrian access to transit over automobile access and parking
MH5	Create transit plazas and pedestrian-only streets at select Urban Growth Centres
	Active Transportation Infrastructure
IN1	Continue to build walking and cycling infrastructure on an opportunity basis (e.g. in combination with road reconstruction)
IN2	Support the creation and adoption of best practices to integrate Crime Prevention Through Environmental Design (CEPTED) in community design to prevent the loss of shortcuts through communities and support greater connectivity – in collaboration with police

Initiative	
Number	**Policy and Planning**
IN3	Complete missing sidewalks to improve connections to transit and pedestrian destinations with new approaches to overcome hurdles
IN4	Build all planned walking and cycling infrastructure
IN5	Install protected bicycle storage areas at stations, places of employment, and major community, institutional, educational, cultural, and shopping locations
IN6	Fund community safety education programs for pedestrians, cyclists and professional drivers
IN7	Improve active transportation safety content in driver education programs, driver handbooks, licensing exams, etc.
IN8	Develop standards for active transportation facilities to be adopted for all private- and public-sector implementation across the GTHA
IN9	Develop a regional integrated and interconnected trail network
	Education and Outreach
EO1	Institute Roadway and Pathway Safety Ambassador Program
EO2	Support programs that promote walking and cycling to school
EO3	Improve bicycle collision reporting process
EO4	Produce a GTHA-wide cycling map
EO5	Develop employer-based programs to encourage commuting by walking, cycling, transit, and car-pooling (e.g. Smart Commute)
EO6	Launch a comprehensive GTHA-wide active transportation promotion campaign
EO7	Develop social marketing campaign directed at the household level
EO8	Develop and train cycling instructors
EO9	Provide traffic safety education to all children in grades four to six
EO10	Fund community safety education programs
EO11	Improve active transportation safety content in driver education courses, handbooks and exams
	Funding
FU1	Commit annual funding to pedestrian and cycling improvements
FU2	Develop program to fund projects to overcome natural and man-made barriers to travel by active transportation
FU3	Allow development charge funding to be used for providing and improving pedestrian and cycling facilities, as well as supporting programs (e.g. Smart Commute) that encourage travel by active transportation modes
FU4	Develop cost-sharing programs with the province to support active transportation improvements
FU5	Increased gas tax funding for active transportation facilities from provincial and federal sources
FU6	Use revenues generated from public parking and road pricing (if applicable) to support capital and operating costs of transit, walking, and cycling facilities

Initiative	
Number	**Policy and Planning**
FU7	Dedicate a minimum percentage (e.g. five per cent) of capital and operating funding for transit and road infrastructure from other levels of government to active transportation projects, including for each individual project
	Incentives
IC1	Develop municipal partnership program among upper-tier municipalities to support Active Transportation (AT) improvements in line with regional priorities
IC2	Create bikeshare program in downtown Toronto and other Urban Growth Centres with opportunity for funding and delivery by the private sector
IC3	Work with developers to provide transit passes for residents and employees in higher-order transit areas
IC4	Make employer-provided commuter benefits, such as parking cash-out and free transit passes, tax deductible to employers
IC5	Provide tax incentives to encourage property owners (e.g. private land owners, rail companies, etc.) to allow AT infrastructure to cross their property
IC6	Develop legislation to encourage use of rail lands for active transportation infrastructure (e.g. reduced liability to rail companies)
IC7	Make portion of bicycle purchases tax deductible
IC8	Legislate that employers provide a "cash-out" equivalent to the value of a parking space for employees who choose not to drive alone to work
IC9	Develop active transportation rewards program (e.g. personal carbon allowance)
	Supportive Measures
SU1	Expand *Transportation Tomorrow Survey* to include all walk and bicycle trips
SU2	Improve reporting mechanisms for bicycle theft
SU3	Create local advisory committees for walking and cycling in each municipality, with a longer term goal of the creation of a regional council
SU4	Establish pedestrian/cycling coordinators in all municipalities (full-time or part-time as required)
SU5	Give pedestrians and cyclists legal priority status in designated pedestrian and cycling zones

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